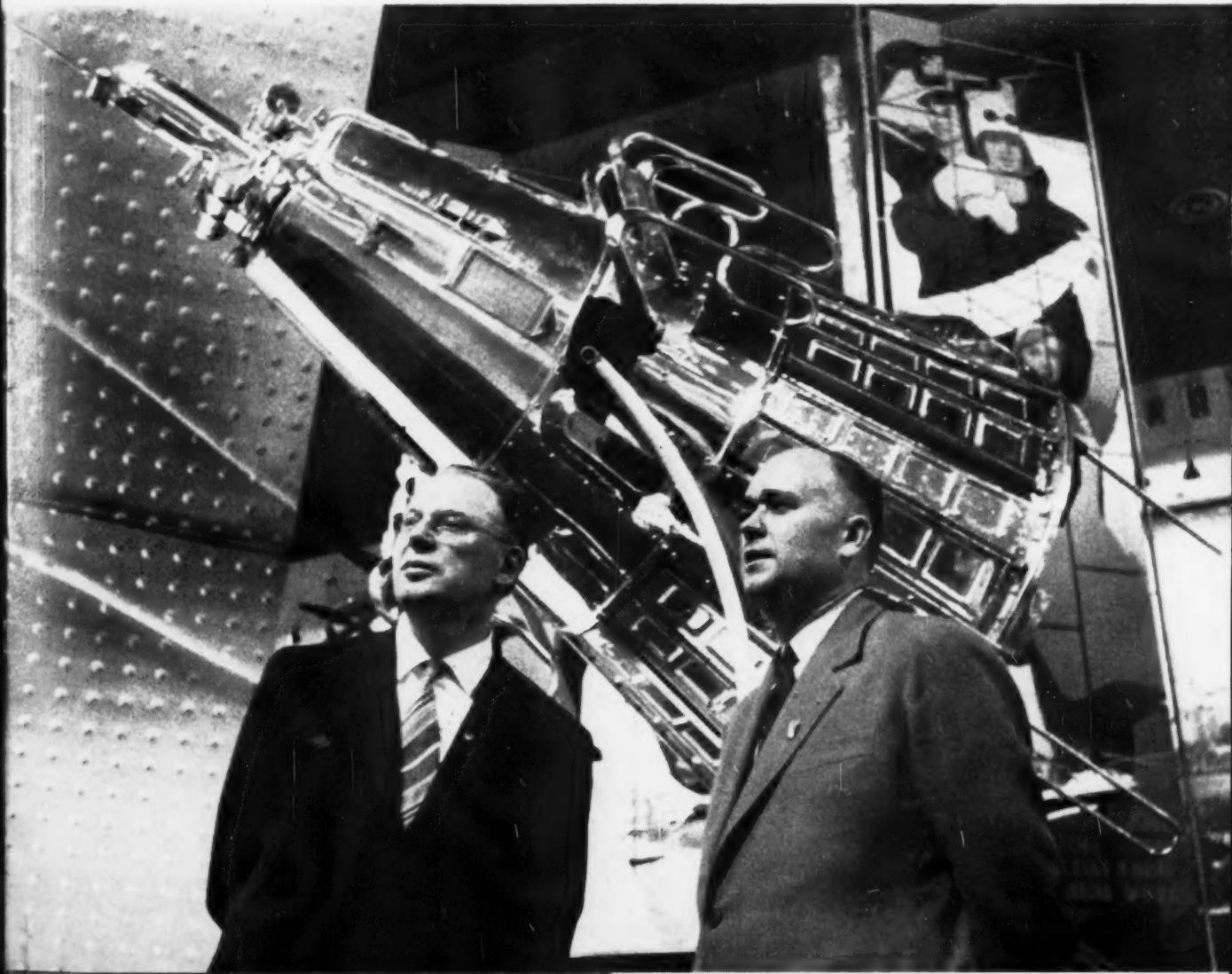


The IRON AGE

July 9, 1959

A Chilton Publication

The National Metalworking Weekly



Showmen Rozhestvensky and Manzhulov—

**What Soviet Exhibit
Tells About Russian
Industry P. 55**

**Back Door Maneuvers
Of Steel Labor Talks — P. 58**

**Nondestructive Test
Checks Tubes 100 Pct — P. 89**

Digest of the Week — P. 2-3

FROM ROUGH...

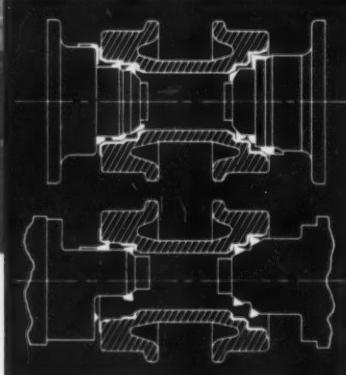
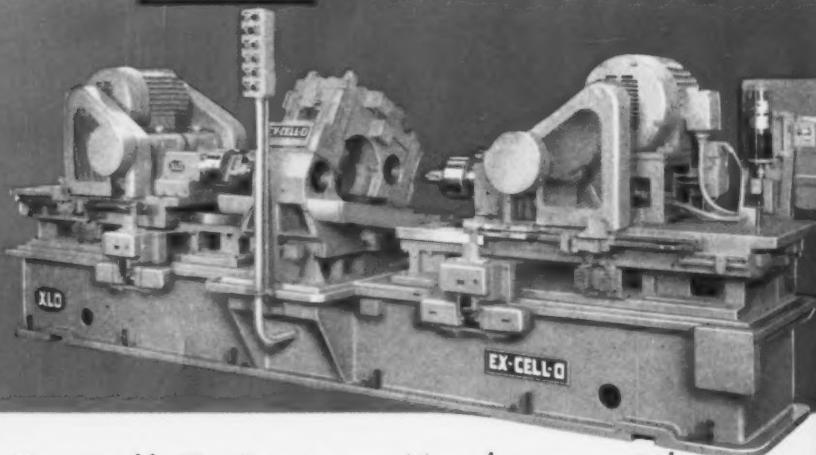
Heavy boring and
plunge-facing

TO FINISH

Precision boring
and facing



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59-23

**Ex-Cell-O Custom Machine—with
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July 9, 1959—Vol. 184, No. 2

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CONSTRUCTION

Pacing the Upturn?—Home and roadbuilding outlays have already



reached new highs. And the upsurge in industrial construction is yet to come. P. 60

TARIFF CHANGES

Hearings Are Set—In 1954 Congress told the Tariff Commission to simplify tariffs. The group now has its recommendations on metals about set. Industry can offer opinions July 14. P. 61

REPORT TO MANAGEMENT

Boom Philosophy—Consumers are earning more and spending all of their new income. On top of that, they are extending credit rap-

Metalworking



USSR EXPOSITION: Men behind New York show are Konstantin Rojdestvensky, chief designer and architect of the exposition, left, and Alexei Manjulo, director general. Industrial displays are a big feature of the show. P. 55

idly. Added income, supplemented by credit, is a big factor in the current high rate of business. P. 67

1961 BUDGET

It'll Be Bigger—The fiscal experts at the White House say Congress adds to a budget faster than they can trim. So they'll ease off for 1961 to the tune of about \$3 billion. P. 73

FEATURE ARTICLES

TUBE INSPECTION

One Hundred Per Cent—A new eddy current test setup reveals location of all tubing flaws on a continuous non-destructive basis. It distinguishes between harmless surface irregularities and those defects that are rejectable. It gives users a firm guarantee of tubing quality. P. 89

ALUMINUM DIP BRAZING

For Quality Joints—Key to the process is careful integration of design, processing and tooling. Good equipment and control are vital. The payoff is high output at low cost, and sound assemblies. P. 93

SAND MOISTURE GAGE

It's a Nuclear Probe—A new technique is solving the old problem of maintaining proper moisture content in foundry sand. Sealed in a stainless capsule are 32 g of plutonium-239 mixed with beryllium powder. Neutrons are counted elec-

tronically for fast measure of moisture. P. 97

ELECTROPLATING WIRE

With Spiral Handling—A fast efficient electroplating process combines the high tensile strength of steel with the conductivity of copper. The production setup uses compact spiral handling system. P. 98

COMPUTER FOR STAINLESS

Experiment in Steelmaking—By using a digital computer, a laboratory comes up with some factors that govern economy in steelmaking. The computer actually chose the most economical blend of raw materials for a 70-ton heat. P. 100

MARKETS & PRICES

FAST-WEARING TIRES

Controversy Brews—Tiremakers are putting blame on the auto industry for shorter tire life. Smaller wheels, higher horsepower, and power accessories have speeded up tire wear, tire firms claim. P. 69

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FORMING MASSIVE TUBES

In One Pass—Adapting a popular cold-forming method to work on huge parts may help rocket builders. Next week's technical feature tells how an oversize machine forms blanks into thin-walled tubular sections with no welding needed.

LOS ANGELES SMOG

No. 1 Cause: Auto Fumes—Auto afterburner exhaust control systems may help Los Angeles in its smog fight. Union Oil tries another idea—more carburetor control in its "smogless" cars. P. 75

CENTERLESS GRINDING

Norton Enters Field—A new centerless grinder introduced by Norton Co. claims three major design advances. They are a new Straddle-Bearing design, a mobile wheel head, and easy loading. P. 77

WELCOME RESPITE

Steel Users Make Hay—The two-week extension of the steel labor contract was a break for many steel users. They're taking advantage of it. P. 123

FURNACE PRICES

Increases May Be Coming—Industrial furnace makers say they will boost prices if raw material costs for items like steel go up. They also predict longer deliveries as backlog increases. P. 124





**How B&W JOB-MATCHED TUBING
reduces fabrication costs in pressure tube applications**

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Then a B.F.Goodrich distributor recommended a B.F.Goodrich belt that was specially developed for carrying hot materials. This belt is made with a heat-resisting rubber that can stand

temperatures that would char or burn ordinary rubber belts.

The B.F.Goodrich hot-material belt was put to work and lasted 3 years—two years longer than the belt it replaced. Even then, it was an accident, not heat prostration, that made replacement necessary. "No one knows how long this belt might have lasted if it hadn't been accidentally ripped," says the head of maintenance at the plant.

In this case, the purchasing agent had a good rule which hundreds of

others like him follow. Instead of accepting the high cost of frequent replacements, he called in a B.F.Goodrich distributor, and found exactly what he needed to cut costs and keep the foundry running with fewer shutdowns and delays.

Your B.F.Goodrich distributor has full information on the belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about any of the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Company, Dept. M-619, Akron 18, Ohio.*

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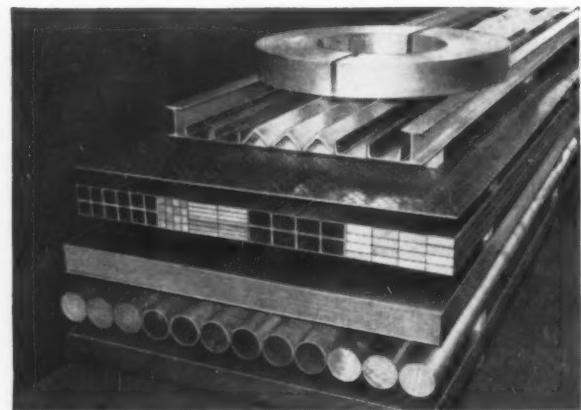
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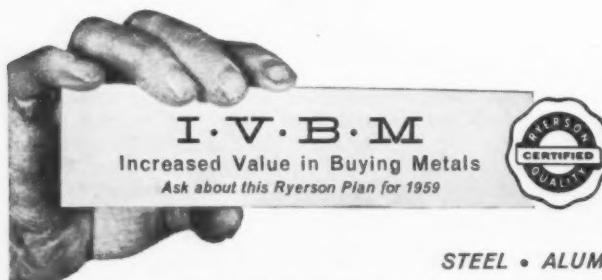
Expert technical help—Your Ryerson Representative is well qualified to serve you. Backed by a staff of experienced aluminum specialists, he is ready to help with any problems involving the selection and fabrication of various aluminum alloys.



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Stable Steel Prices

A Basic False Premise?

The government has picked on steel prices as a starting place for "stability." No one seems to know why it did this. But it did.

While the heat is on steel prices, other prices keep going up. By inferring that if steel wages stay put, steel prices will not move, some steel leaders may have boxed themselves in.

What's more serious for steel—and for other industries—is that this blind spot in thinking could produce "voluntary" price stabilization. No steelmaker has said point-blank that steel prices should stand still. But many have inferred as much.

Talk about lower steel prices is a waste of time. That's understandable in view of the miserable failure of a "noble experiment" back in 1948. Then a price-reduction-no-wage-increase balloon collapsed three months after it had been sent aloft.

Now we appear to have another experiment underway: Steel price stabilization. It is fostered by White House pressure and aided also by management's desire to stop wage increases.

Suppose that talk of higher wages and cost-push inflation leads to public and governmental belief that if wages are held steady or restricted

to small gains, steel prices will stay put. That would be unfortunate.

Other costs are moving up. Suppose aluminum, copper, and zinc prices go up. All are widely used in steelmaking. Suppose manganese and other alloys go up in price. Then perhaps new freight rate increases. Suppose John L. Lewis decides he wants another \$2-a-day increase. None of this is far fetched.

Suppose truck rates go up as they are likely to. Construction costs are up. Common labor in construction is silk stocking compared with common labor in steel. Paper, boxes, crates, lumber, and a hundred other items in the stream of iron and steel making are going—or may go—up.

Plant and equipment prices are bargains today. These good deals won't last too long. True, steel people can whack away at costs through better ores, new techniques, and so on. But this isn't the crux of the present steel price blind spot.

Unless steel officials make it plain they are not talking about long-time frozen steel prices, they may wake up some day with a "voluntary" price freeze.

And all because some people have been "too busy" to look at the "big picture."

Tom Campbell

Editor-in-Chief

TV cameras, transmitters and receivers, punched card programming, electronic brains . . . Inland's new 46" Universal automatic slabbing mill is a far cry from the mills of yesteryear. At his fingertips, today's mill operator—Inland Slabber . . . 1959—has power and precision control never before achieved. Currently fed from six soaking pit batteries, this giant, new slabbing mill operates at a capacity of 1,800,000 tons per year. As primary and finishing capacity grows in response to Inland's continuous plan for expansion, this mill, built with an eye to future requirements, can draw upon more than three times as many soaking pits—step-up its capacity to a tremendous 4,000,000 tons. For soaring mid-western industry, this means an always dependable source—producing more uniform steel of highest metallurgical quality, at ever-increasing speed.

Building Today, With an Eye to Tomorrow

INLAND SLABBER... 1959



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THE IRON AGE NEWSFRONT

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Team up Steel and Paper

A tough cellular core of kraft fiber impregnated with phenolic resin sandwiched between steel sheet forms a quality door. A special high-strength adhesive holds the honeycomb sandwich together. Advantage comes in ease of construction and in exceptional evenness of the steel facings. Extensive testing has shown that the doors can take rugged service.

Speed Ball Stud Output

Two new machines have been developed and recently went into production for machining and finishing ball studs. These will cut time and costs per piece drastically, improve tolerances and micro-finish. Secret lies in holding the stud at an angle to tools.

Scarce Metals Overflow

Government stockpiles of metals scarce only a few years ago are now overflowing. Nobody in Washington is willing to call a halt to the multi-million dollar buying programs. In nickel, for example, the government owns \$97 million more than it needs. For all commodities, the excess stocks (over and above actual needs) are valued at more than \$4 billion.

Use Right Hydraulic Fluid

Efforts are being made to have the petroleum industry supply hydraulic system fluids on wide availability and in small quantities. As it is, the small user of just one or two bulldozers, say, does not have ready access to the right fluid for his hydraulic system. He usually ends up adding plain motor oil or something else not quite right for the job. Result: lower efficiency, short pump life.

Scrap Bundles Get Initials

Proud of its bundle quality, a leading scrap processor is now embossing ends of its baled scrap with the company monogram. It's done with a steel die in the baling press wall. Idea is

to provide permanent identification of scrap bundles and save the company from blame for contaminated and off-grade material from other sources. Marking, plus stringent quality control, has virtually eliminated mill rejects for long periods.

Precision with Welded Unit

Watch for announcement of another welded steel lathe. Since initial announcement, machine tool manufacturers have been watching this development closely. Rigidity of the welded unit offers a high-precision lathe at a relatively low cost. It's regarded as a strong weapon in beating low-priced foreign tools in the U. S. market.

Still Await Atom Economy

Insiders in the electrical industry, watching costs of conversion of atomic to electric power, are expressing disappointment. Expected cost-reducing breakthrough that would make atomic fuels more competitive with coal still hasn't arrived. One researcher expressed a private opinion that we may have to wait for hydrogen developed power to achieve really competitive cost ratios.

Aluminum in Light Cars

Producers of light metals will cash in on the light car market along with automakers. In addition to aluminum engine blocks, other components will be made of the metal. Among them—water and fuel pumps, and fan blades. Ultimate aim is to make use of aluminum for bodies and frames.

Preform Buff for Stainless

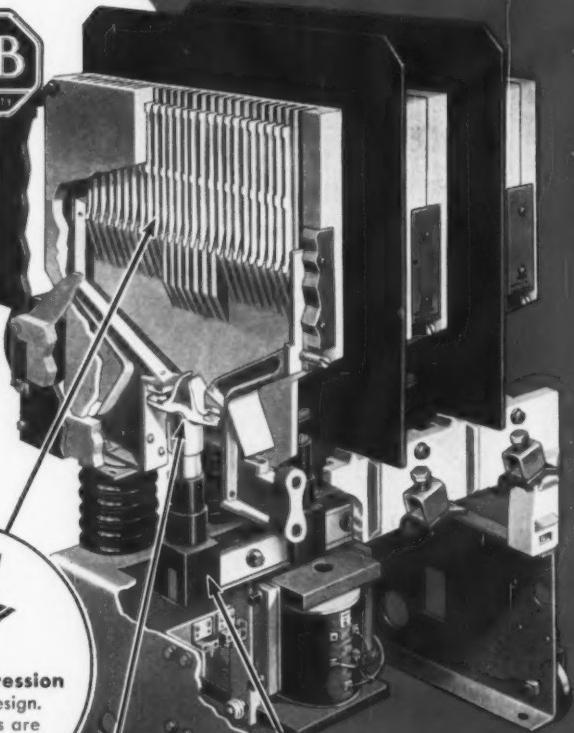
Development work at a major maker of finishing equipment has turned up a way of saving costs on hard to match stainless pieces. It's preform flat stock buffing. This gives excellent color match on finished decorative pieces. There's big savings in mating finishes of intricate shapes.

Here's the
inside story
of industry's

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THIS SOLENOID AIR BREAK
CONTACTOR IS THE HEART
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Faster Arc Suppression

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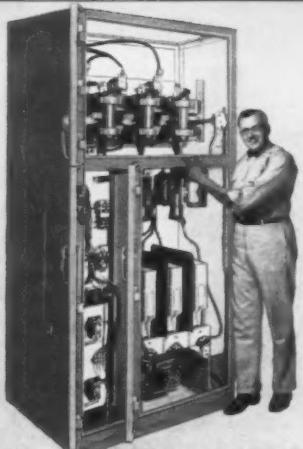


Double Break Contacts

Silver alloy contacts never need maintenance. Vertical motion assures uniform contact pressures.



Only One Moving Part
Simple solenoid design eliminates trouble-causing pins, pivots, and flexible jumpers.



**A-B High Voltage
Starter with Air
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Bulletin 1159 high voltage air break, across-the-line induction motor starter in NEMA Type 1 enclosure. All Allen-Bradley high voltage starters are equipped with current limiting fuses with interrupting capacities of 150,000 kva at 2300 v; 250,000 kva at 4600 v.

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LETTERS FROM READERS

Lost Leadership

Sir—I have been intending to write you regarding your editorials in recent issues of IRON AGE and, more particularly, about those relating to wages in the steel industry.

I was quite impressed with the one appearing in the June 18 issue entitled "Lost Leadership—It Could Happen To Us." I want to congratulate you on an extremely fine treatment of a subject which has been most disturbing to me. I think editorials in this vein are quite effective because I have heard quite a few favorable comments about recent ones.—W. H. Webb, Webb, Mackey & Burden, Pittsburgh, Pa.

Against TVA

Sir—in your November 28 issue there was an article entitled "Get Government Out of Private Business," by Congressman Clarence J. Brown. If they are available, I would like to secure four copies of this article.

One of our Senators from Illinois, Senator Paul Douglas, is very strong for such things as the Tennessee Valley Authority. In correspondence with him I have suggested that the government dispose of its investment in the Tennessee Valley Authority to private capital.

Would Cut Taxes—The proceeds of the sale of the property could be applied to the public debt and the resulting reduction in income taxes be used for operating expenses of the government.

Senator Douglas states the TVA makes payments in lieu of taxes to the federal government. I never heard of such a thing, and if they do, it is kept under cover pretty much.—C. R. Rosborough, President, Moline Tool Co., Moline, Ill.

* We find that the TVA is required to pay five pct of its revenues

to the states and counties where TVA power is consumed "in lieu of taxes." Of course five pct is hardly equivalent to the taxes that would be paid by a private utility. The "in lieu" payments for fiscal 1959 were \$5,900,391.

We also learn that Rep. W. S. Broomfield (R-Mich) charges that Tennessee "raiders" already have turned up 23 prospects for moving industrial plants from Michigan to Tennessee. He says, in other words, Michigan taxes helped pay for the construction of TVA plants, "... so that in effect our workers are paying taxes to force themselves out of business in Michigan."—Ed.

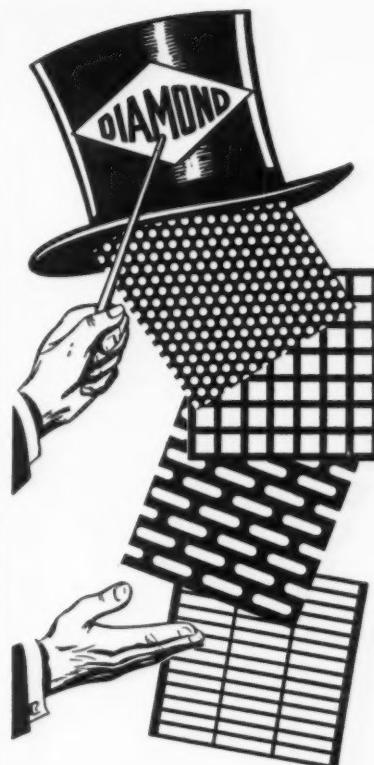
Nickel Plating

Sir—The article in the June 11 issue, "Duplex Type Nickel Plate to Protect Zinc Die Castings," is presented in a very concise and readable fashion.

I am particularly delighted in the way it is presented, being the author of the paper from which it was abstracted. I would like to obtain at least 25 copies.—M. R. Caldwell, Mgr., Electroplating & Finishing, Doehler-Jarvis Div., National Lead Co., Grand Rapids, Mich.



"Their new union contract included an escalator clause."

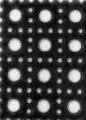
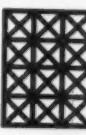
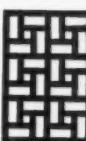


Top-Hat Quality IN Perforated Metal

The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

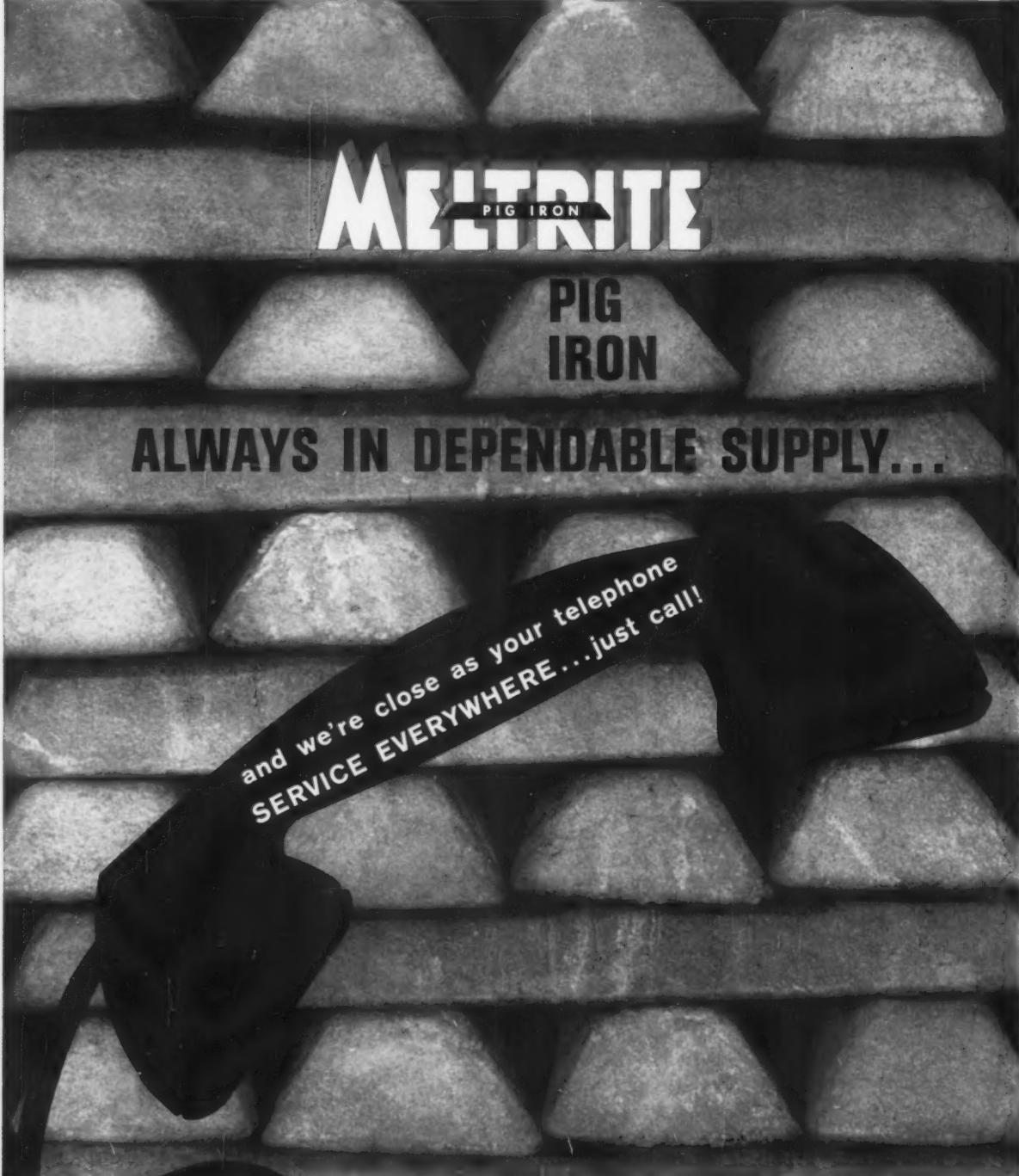
Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Acoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.



**DIAMOND MFG. CO.
WYOMING** WILKES-BARRE AREA PA.

Manufacturers of DIAMONTEX, the Perforated Metal Lay-in Panel for better Acoustical Cellings. New Bulletin No. 47 gives complete illustrated information. Write for free copy.



MELTRITE
PIG IRON

ALWAYS IN DEPENDABLE SUPPLY...

and we're close as your telephone
SERVICE EVERYWHERE...just call!



PICKANDS MATHER & CO.

CLEVELAND 14, OHIO

CHICAGO • CINCINNATI • DETROIT
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IRON ORE • PIG IRON • COAL • COKE • FERROALLOYS • LAKE FUELING • LAKE SHIPPING

FATIGUE CRACKS

Russian Readers

Even before the Soviet Exhibition of Science, Technology and Culture opened in New York last week, our editors were at the scene.

Our intent was to observe, interview, and report our findings on what the show might disclose about Soviet industrial progress.

Much to our surprise, almost every Russian industry representative we interviewed beamed with recognition when we identified ourselves. Most of them, it appears, see *The IRON AGE* regularly.

One Copy Before—A little bit taken aback at this familiarity, we consulted our circulation department to find out the details.

Between 1954 and 1958, we had but one Russian subscriber, and that at the request of our State Department. Our single copy was sent under an exchange agreement to the Lenin Library Book Exchange in Moscow.

But last year, a freer exchange of information with the USSR became the U. S. policy. We then offered to accept some Russian subscriptions. (For one thing, we knew our single copy was translated and widely circulated anyway.)

... But More Now—To date, we have a total of nine Russian subscribers, most of them libraries or institutions. But apparently our readership would delight any editor.

Getting back to the story, you can read our report on the Exposition, complete with our own pictures, in this week's Special Report on p. 55.

Next week we will have another picture-story report specifically on what the USSR is doing in the machine tool field.

Inside View

A note from the British Iron & Steel Institute tells us that Stal,

Russia's No. 1 steelmaking publication, is now available in English. We have the January 1959 issue, an 80 page, well-illustrated magazine. Subscription price is \$58 for twelve monthly issues. Write us if you are interested and we'll tell you how to subscribe.

Politeness Pays

If you're going to fight with your Congressman, be polite about it. Rudeness or threats will get you nowhere, says the *Machinist*, published by the International Assn. of Machinists.

And if you insist on getting abusive you may get the response one Congressman sent in answer to an insulting letter.

"Sir, my stenographer, being a lady, cannot type what I think of you. I, being a gentleman, cannot think of it. You, being neither, will understand what I mean."

Secrets of Success

The Wheeling Steel Corp. passes along these helpful tips for popularity under the title, "Want To Be Liked?"

Don't give compliments that are lacking in sincerity.

Don't contradict people even if you are sure you are right.

Don't be inquisitive about the affairs of even your most intimate friend.

Don't underrate anything because you don't possess it.

Don't conclude that you have never had an opportunity in life.

Don't believe that anybody else is happier than you.

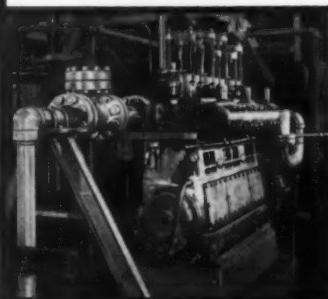
Don't believe all the evils you hear about people.

Don't repeat gossip, even if it does interest the crowd.

Learn to hide your aches and pains under a pleasant smile.

Learn to reflect sunshine!

COMPLETE CENTRAL HYDRAULIC SYSTEMS FOR



die casting



extruding



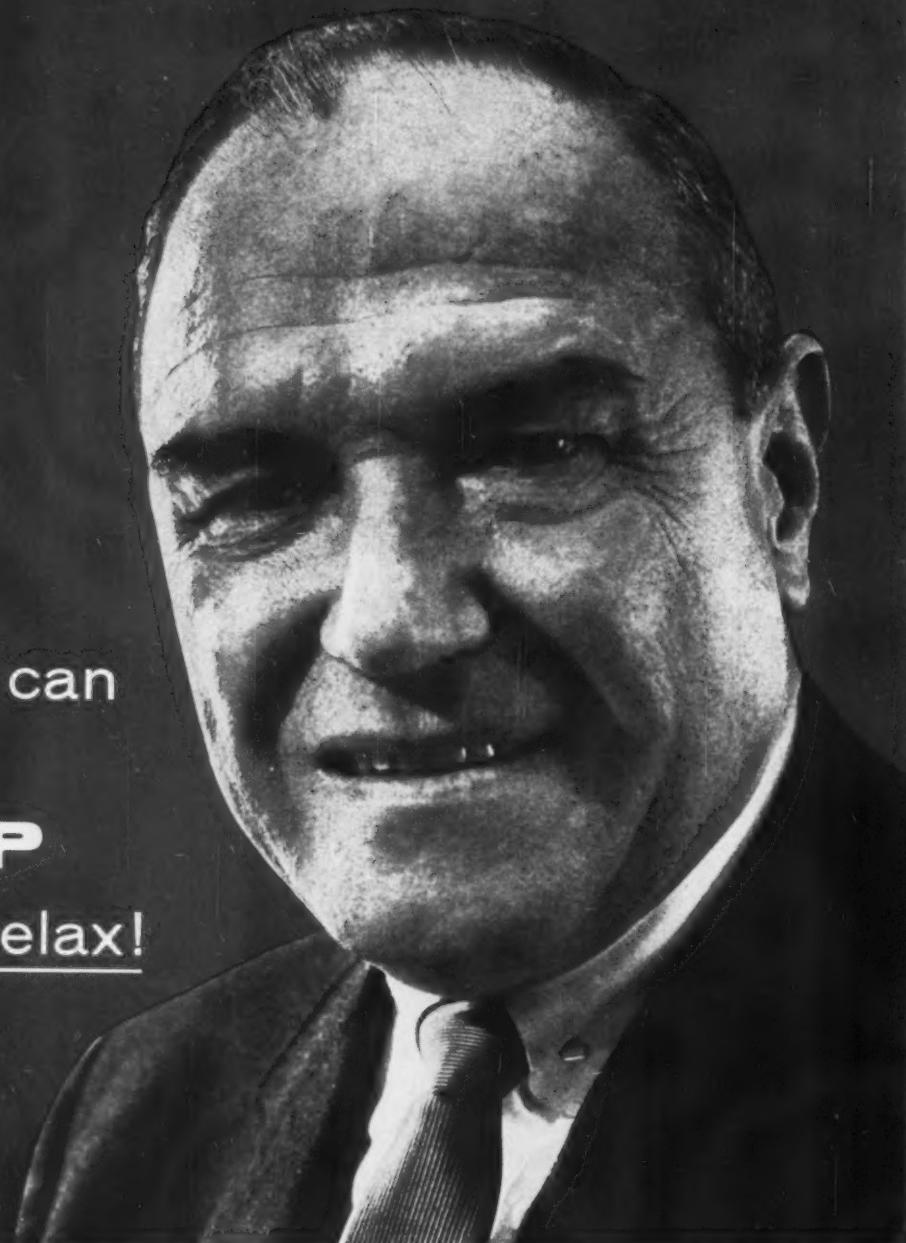
plastics molding

From Aldrich you get all the benefits of unified engineering plus the newest in pumping equipment. Aldrich Direct Flow Pumps to 2500 hp. Aldrich-Groff Controllable Capacity pumps to 125 hp. Pressures to meet your requirements. Write for data.

LOWER PUMPING COSTS WITH



Aldrich Pump Company
8 Pine Street, Allentown, Penna.



"Why you can
specify
JESSOP
and then relax!

"My name is Tom Gabriel—vice president in charge of sales for Jessop's high speed and tool steels, ground flat stock and composite die sections. Of all the reasons why it pays to specify our specialty steels, none tops this one from a repeat customer—*'Jessop has a greater sense of responsibility.'*

"We have earned this reputation for responsibility. It comes from a continuous employee training program stressing these facts . . .

"The cost of Jessop 'jewelry' steel is small compared to the cost of working that steel into finished products. That's why our customers must get perfect steel. That's why every man on the Jessop team strives to be a perfectionist. Because of this greater sense of responsibility, repeat customers know they can always depend upon *consistent* high quality.

"When you need faster delivery of high quality specialty steels—Specify Jessop . . . and then relax."

JESSOP
STEEL COMPANY
Washington, Pennsylvania
OFFICES IN PRINCIPAL CITIES

VMA 6743

Stainless, alloy, tool, cast-to-shape, and forging steels, precision ground flat stock, and other specialty steels

COMING EXHIBITS

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsburgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

JULY

Truck Trailer Mfrs. Assn. — Annual summer meeting, July 13-15, The Homestead, Hot Springs, Va. Association headquarters, 710 Albee Bldg., Washington, D. C.

Metal Lath Mfrs. Assn. — Meeting, July 21-22, Statler Hotel, Buffalo, N. Y. Association headquarters, Engineers Bldg., Cleveland.

Assn. of Roller & Silent Chain Mfrs. — Summer meeting, July 22-23, Grand Hotel, Mackinac Island, Mich. Association headquarters, 3343 Central Ave., Indianapolis.

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress — Metal mining-industrial minerals convention, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

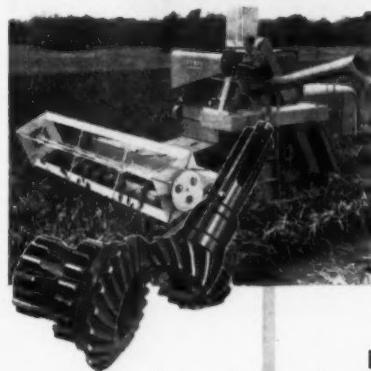
American Die Casting Institute — Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago. Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn. — Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America — Fall meeting, Sept. 21-22, The Homestead, Hot Springs, Va. So.

(Continued on P. 16)

GEARS to drive
newest
machines...

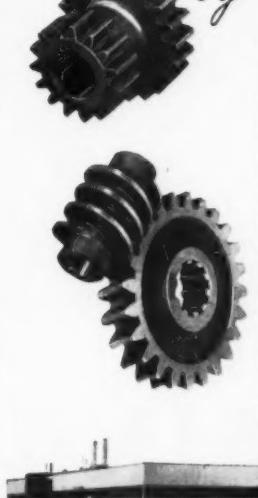


EFFICIENTLY,
ECONOMICALLY

FAIRFIELD

Getting into production on new models and new machines often calls for quick action to meet desired time schedules. FAIRFIELD CAN HELP YOU!

As one of America's largest independent producers of GEARS and DIFFERENTIALS, Fairfield's facilities are complete. You get the benefits of newest high capacity machines coupled with regular big volume output in an ultra-modern plant designed exclusively for producing fine gears EFFICIENTLY, ECONOMICALLY. Check with Fairfield NOW on your gear requirements. Call or write. FAIRFIELD MANUFACTURING CO., 2319 S. Concord Rd., Lafayette, Indiana. Telephone 2-7353.



Gears and Differentials

for **FINE**
GEARS

Made to Order for:

TRACTORS • HEAVY DUTY TRUCKS • AGRICULTURAL MACHINERY • POWER SHOVELS AND CRANES
MINING MACHINES • ROAD GRADERS • BUSES • STREET SWEEPERS • INDUSTRIAL LIFT TRUCKS



ACCO X-WELD ACID PICKLE CHAIN

**A New Alloy Chain Specially Made to Withstand
the Heat and Corrosion of Acid Pickling**

This new chain resists the destructive effects of both heat and corrosion in normal sulphuric acid pickling operations. It can be used successfully in concentrations of Sulphuric Acid up to 20%, and at temperatures up to 200°F. Made in Acco's famed X-Weld design, this new chain has welds that are as strong or stronger than the chain itself.

Under comparison tests, Acco X-Weld Acid Pickle Chain has proved equal or superior to higher priced non-ferrous chain. In addition, the high alloy content makes it suitable for use in annealing furnaces at temperatures up to 1700°F. without scaling or without losing its acid-resistant properties. When subjected to elevated temperatures, full Working Load Limit of Acco Pickle Chain is restored when chain is returned to room temperature.

Acco X-Weld Pickle Chain is available now in five sizes ($\frac{5}{32}$ " to $\frac{3}{4}$ ") for assembly in Acco Registered Sling Chains. For information, write our York, Pa., office for **Bulletin DH-169**.

ACCO Registered SLING CHAINS

American Chain Division • American Chain & Cable Company, Inc.

Bridgeport, Conn. • Factories: *York and *Baldock, Pa.

Sales Offices: *Atlanta, Boston, *Chicago, *Denver, Detroit, *Houston, *Los Angeles, New York, Philadelphia, Pittsburgh, *Portland, Ore., *San Francisco
*Indicates Warehouse Stocks



EXHIBITS, MEETINGS

(Continued from P. 15)

society headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel, Chicago. Association headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society—National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

National Assn. of Sheet Metal Distributors—Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 5-7, Sherman Hotel, Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago. Association headquarters, 420 Lexington Ave., New York.

Society of Automotive Engineers—National aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc.—Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E 6th Bldg., Cleveland.



**62% MORE
POWER**

Drill for drill, pound for pound, Black & Decker gives you more power than ever before. This new $\frac{1}{2}$ " Special Drill, for example, gives you 62% more power than its predecessor. Yet, it weighs 20% less—costs 8.5% less. That's the kind of development you expect from the electric tool leader.....

SINCE 1919

Now Black & Decker gives you **TWICE THE VALUE** in the world's most complete drill line

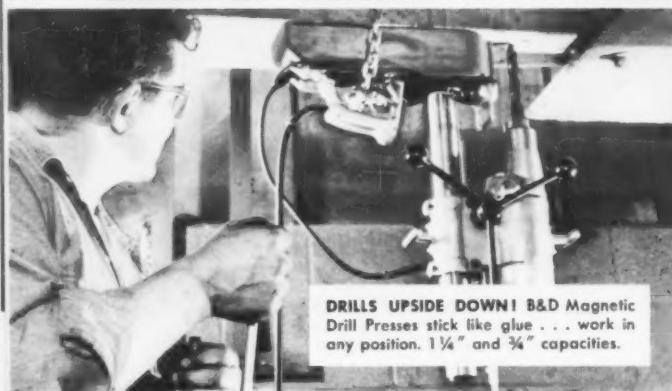
A glance at the chart quickly shows the outstanding progress in Black & Decker drills. But, that's only part of the story. During the past two years, new motors, new compactness, new streamlining have been introduced into the Black & Decker line. Add extra value features like full-power in reverse at no extra cost—you'll see why you now get *up to twice the value per dollar!* The tools shown below are but a few in the all-new Black & Decker drill line. Check their outstanding features. For top value every time be sure to see the Black & Decker line at your Distributors!



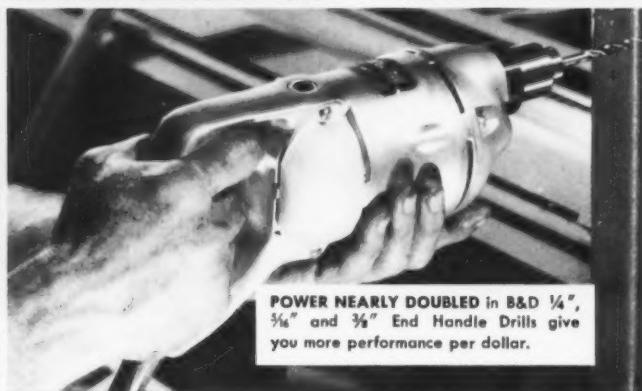
MOST POWERFUL DRILL of its size, the $\frac{3}{4}$ " Standard. Powered to pull a locomotive. Full power in reverse.



TREMENDOUS TORQUE developed by this $\frac{3}{8}$ " H.D. Holgun® takes on tough ones with ease. A tool "best buy."



DRILLS UPSIDE DOWN! B&D Magnetic Drill Presses stick like glue . . . work in any position. 1 1/4" and 3/4" capacities.



POWER NEARLY DOUBLED in B&D $\frac{1}{4}$ ", $\frac{5}{16}$ " and $\frac{3}{8}$ " End Handle Drills give you more performance per dollar.

—MAIL COUPON FOR FREE DEMONSTRATION—

THE BLACK & DECKER MFG. CO.
Dept. 987 Towson 4, Md.



- Please arrange a demonstration of..... drill(s)
 - Send me information on tools checked below

Name _____ Title _____

Company

Title

Address

874

2

Z. Stat.

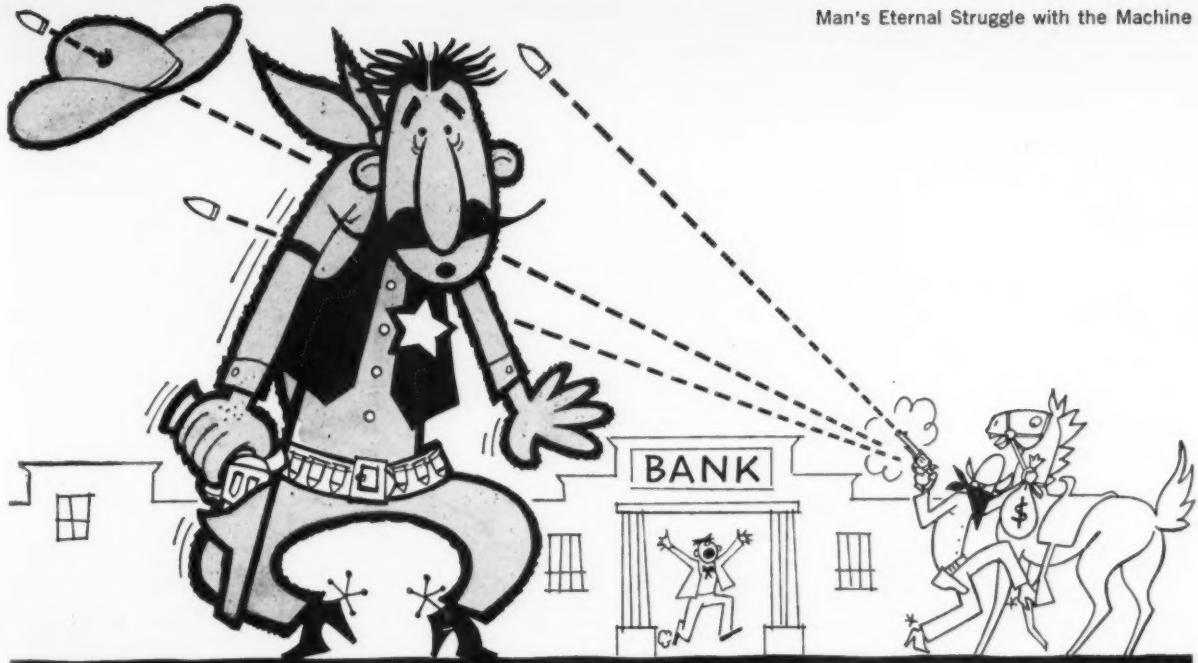
Four small images showing different views of a mechanical device, possibly a pump or valve, with various components like a handle, a valve body, and internal parts.



YOU GET A *BEST VALUE* FROM

Black & Decker®

Quality Electric Tools



COMPETITIVE PRESSURES AND RISING COSTS DEMAND GREATER PRODUCTION EFFICIENCY THAN EVER BEFORE

Have you ever wished you worked in a nice, quiet little shop...?

Sure you have.

The chances are you don't work in one now. There just aren't any nice, quiet little shops anymore. Everybody's out to make a buck. And they all seem to be competitors of yours.

Like everybody else's, your shop is full of complex equipment. Production is rough on the best of it. Eventual breakdown of some sort is almost inevitable. Even though your maintenance people can satisfy most of the problems, what happens when something goes wrong they can't handle?

With your production held up by a breakdown, you can't afford a vendor who passes the buck for service to all the suppliers of his components!

And what about that new equipment you're going to buy? Probably the latest in design. Most likely something your service people don't know anything about at all! Yet, it's got to get into production fast, and stay in as consistently as possible. With your production waiting, you can't afford to test and prove the vendor's machine for him!

Sciaky has always accepted *full responsibility* for its resistance welding and production equipment. Sciaky equipment is designed and built to do the job it was sold to do. That's why it's tested and proved *before shipment*. That's why the Sciaky Service Organization is on call anytime to service Sciaky equipment when necessary.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you're considering equipment. No obligation, of course.

Sciaky Service is a plus-feature that has been wanted by customers all over the world. Why take a chance on service that's sometimes needed on even the best machines. Why, to be sure, when you can enjoy the service facility that has been the difference between expensive production stoppages and minor delays.



75A

SCIAKY BROS., INC., 4923 W. 67th STREET, CHICAGO 38, ILLINOIS • PORTSMOUTH 7-5600

THE IRON AGE, July 9, 1959

19



Dynex, Inc., Pewaukee, Wisconsin, produces single- and double-acting cylinders from Republic ELECTRUNITE Special Smooth I.D. Hydraulic Cylinder Tubing.

Republic ELECTRUNITE Tubing . . . OFFERS MORE TUBE PER DOLLAR

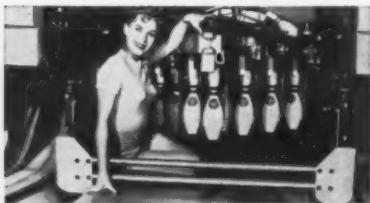
Dynex, Inc., Pewaukee, Wisconsin, has switched to Republic ELECTRUNITE® Special Smooth I.D. Hydraulic Cylinder Tubing in their manufacturing operations. The switch was made because ELECTRUNITE's special smooth, micro-inch inside finish eliminated costly honing, resulting in a better end product at a lower unit cost. Typical example of how ELECTRUNITE is providing thousands of manufacturers and fabricators with "more tube per dollar."

ELECTRUNITE, produced by the world's largest manufacturer of electrically welded tubing, is made from high-

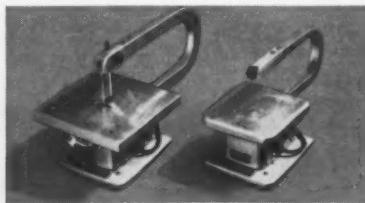
est quality flat-rolled steel, carefully controlled through every step of manufacturing.

ELECTRUNITE Special Smooth I.D. Hydraulic Cylinder Tube is available in sizes up to 4½" O.D. in walls up to .187". ELECTRUNITE Mechanical Tubing is available in round sizes up to 6" O.D. and squares and rectangles up to peripheries of 20 inches. Wide range of wall thicknesses, some up to .250" wall.

Call your Republic representative to see how ELECTRUNITE can offer you "more tube per dollar", too. Or, write direct.



AMF CUTS COSTS, builds a better pinspotter with Republic ELECTRUNITE Mechanical Tubing. Saved \$34,000 in boring, grinding, and material costs.



SAVINGS IN TIME AND MATERIALS by Syncro Corporation, Oxford, Michigan, by using ELECTRUNITE Square and Rectangular Tubing for blade-yokes.



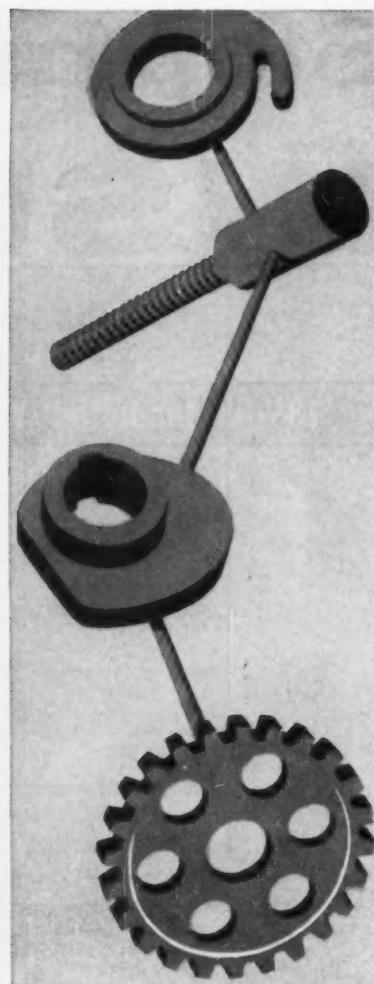
GET REPUBLIC ELECTRUNITE Stainless Steel Tubing in sizes from ¼" through 5" O.D. Bright annealed finish available in sizes up to 4" O.D.



TRUSCON STEEL "BUDGET BUILDINGS" ... 3 WEEK DELIVERY! Fast, economical way to provide warehousing, enlarge manufacturing facilities, erect field offices at lowest cost. Truscon Steel "Budget Buildings" are available in widths of 12 to 28 feet, in 10- and 12-foot heights . . . and in widths of 32 to 48 feet, in 12- and 14-foot heights, in any lengths necessary. Roofing, siding, windows, doors, and hardware shipped as a package with 3-week delivery to your job site.



HERE'S PROOF OF MACHINABILITY—This spiral milled shaft is the heart of a ratchet-type screw driver. It bears the full load of the twisting operations. Excellent machinability of Republic Cold Drawn Steel helps the manufacturer achieve uniform high quality in each shaft. Cold drawing provides additional benefits in improved mechanical properties. Completed parts are stronger and longer wearing. Improved appearance, too. Call your Republic representative, or write direct.



REPUBLIC CARBON COMPATIBLE IRON POWDERS cut costs, broaden the application of powder metallurgy. Big news in powder metallurgy continues to come from Republic. As a result of project 501, Republic has developed and is producing at its Toledo, Ohio, plant, two types of carbon compatible iron powders. Designated as types MS and HS6460, these powders represent a major advancement for the powder metallurgy industry. Use the convenient coupon below.

REPUBLIC STEEL

*World's Widest Range
of Standard Steels and
Steel Products*



REPUBLIC STEEL CORPORATION

DEPT. IA-7973-B

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on the following products:

- ELECTRUNITE Hydraulic Cylinder Tubing
- Mechanical Tubing Stainless Steel Tubing
- Truscon "Budget Buildings" Line Tubing
- Republic Cold Drawn Steel
- Republic Carbon Compatible Iron Powders

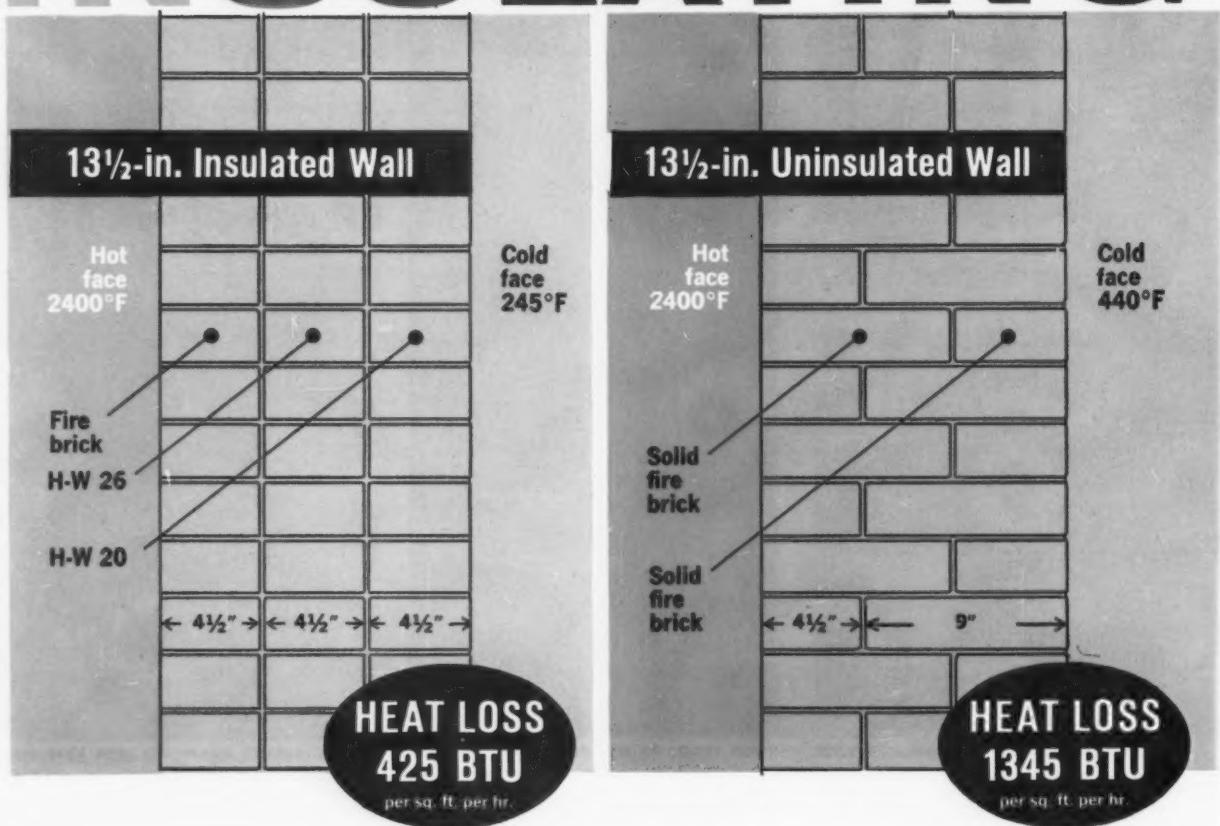
Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

Stop heat losses with INSULATING



These furnace sections show how heat losses are reduced by using Harbison-Walker Insulating Brick for backing fire brick furnace walls. The heat loss is reduced 68.4%. These are typical of savings that are frequently experienced.

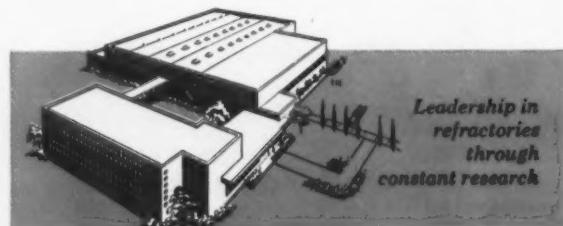
In addition to savings in fuel, floor space and weight, the use of insulating brick provides for faster heating and in some instances reduction of noise.

To assure best overall results, it is important that insulating refractories be carefully selected to secure the most advantageous combination of properties. Harbison-Walker having the full complement of both insulating

and refractory brick, can furnish the correct combination for any requirement.

Harbison-Walker insulating brick have the balanced properties that mean dependable service. Light weight, essential to high insulating value and low heat-storage capacity, have been obtained to the greatest degree, consistent with the mechanical strength necessary for handling and for durability in service.

Technical service based on the most extensive experience and research is freely offered for assistance in determining the refractories best suited for each specific requirement.



The Garber Research Center

Harbison-Walker

FIRE BRICK

From these seven distinct types, choose the ones that will be best for your furnaces

VEGALITE

VEGALITE
Unique silica insulating brick.
For service up to 3000°F.

H-W 30

H-W 30
Maximum service
temperature 3000°F.

H-W 28

H-W 28
Maximum service
temperature 2800°F.

H-W 26

H-W 26
Maximum service
temperature 2600°F.

H-W 23

H-W 23
Maximum service
temperature 2300°F.

H-W 20

H-W 20
Maximum service
temperature 2000°F.

H-W 16

H-W 16
Maximum service
temperature 1600°F.

H-W insulating products include all the other types and classes which provide for every specific requirement.

1. **LOTHERM** having extra mechanical strength is particularly adapted for

use in rotary kilns and for insulating glass tank flux blocks.

2. **H-W LIGHTWEIGHT CASTABLES** comprise five distinct kinds for the fulfillment of the diversified applications of monolithic constructions.

3. **H-W BLOCK INSULATION** and **H-W MINERAL FIBER COATING** are widely used with highly efficient added insulation for backing fire brick and monolithic structures.

INSULATING REFRactories AFFORD FOUR-WAY SAVINGS

1. Savings in fuel

The use of Harbison-Walker insulating fire brick greatly reduces heat losses and the amount of heat stored in the brickwork during operation, which causes loss of heat when the furnace is shut down.

2. Savings in time

With Harbison-Walker insulation the time required to bring the furnace to operating temperature is materially reduced. This is a distinct advantage when furnaces are operated intermittently.

3. Savings in space

Insulated furnaces may be built closer to each other without affecting the comfort of the workmen. This not only permits more efficient handling but also reduces capital expenditures for floor space.

4. Savings in weight

The reduction in weight of the furnace refractory structure often permits the use of a lighter foundation and lighter steel members in the form of buckstays, tie rods and other furnace bindings; also lighter door frames, doors and counter balance mechanisms.

HARBISON-WALKER REFRactories CO.

AND SUBSIDIARIES

GENERAL OFFICES: PITTSBURGH 22, PA.

World's Most Complete Refractories Service

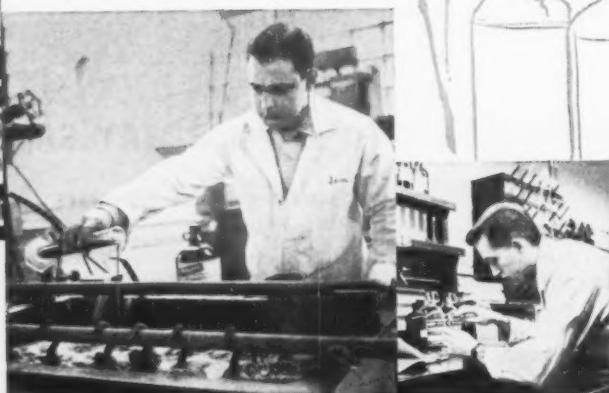




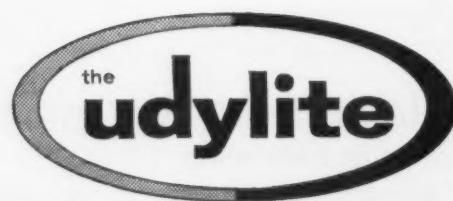
*plating leadership **



SOLVE YOUR PLATING PROBLEM WITH



world's largest plating supplier

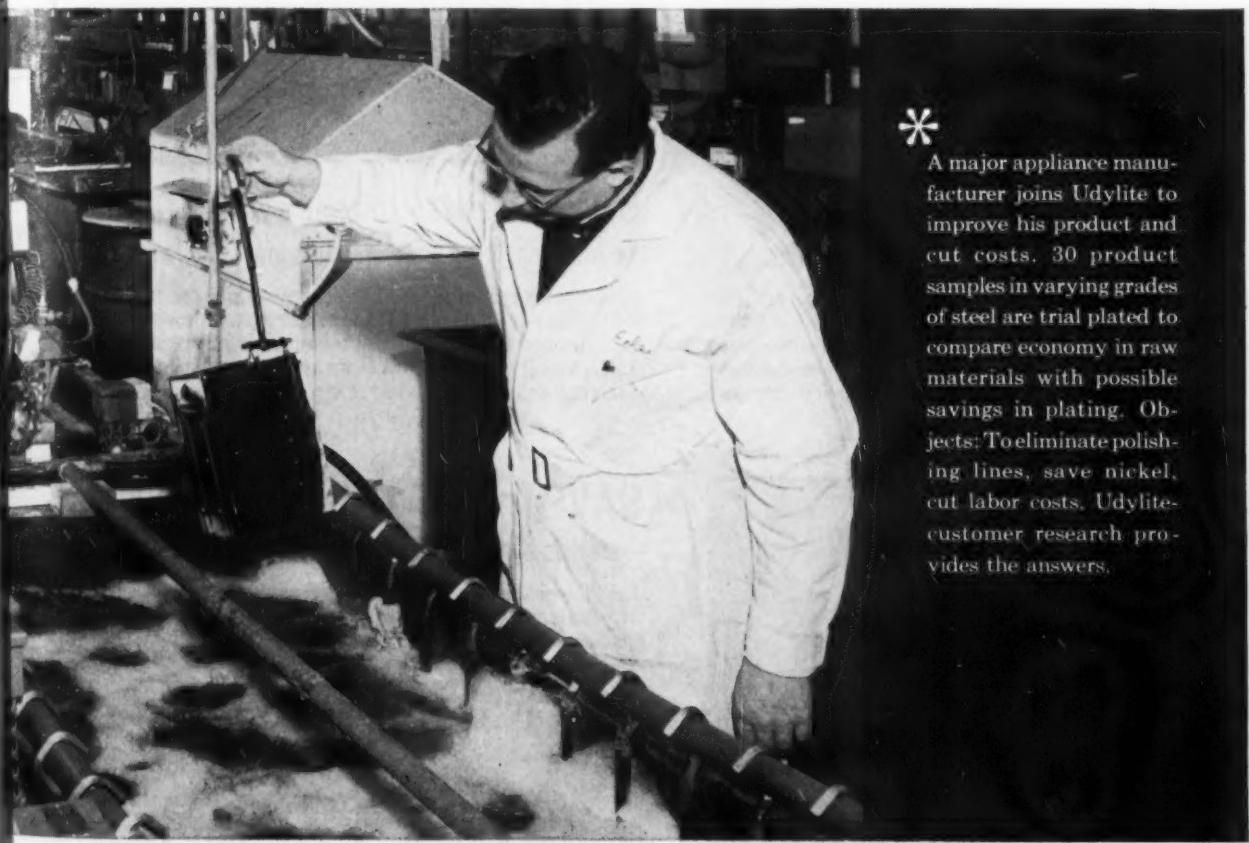


corporation
detroit 11, michigan

There is a customer-service laboratory reserved for your use at all times in Detroit. Udylite's Customer Service teams are established there exclusively to cooperate with you in anticipating those production stoppers that arise now and then . . . to save you countless man hours and dollars, too. Whether it's a solution you're not sure of, the choice of the best-possible procedure, or if you just want to "double check" before starting a big run, this Udylite service is yours. Your sample parts are examined by experts under the tightest laboratory controls. Pilot jobs are conducted under carefully simulated field conditions. Your solutions are the object of precise analysis. Discover how Udylite's complete Customer Service facility can help better your production. And it is just one of the many benefits that come to you from Udylite.

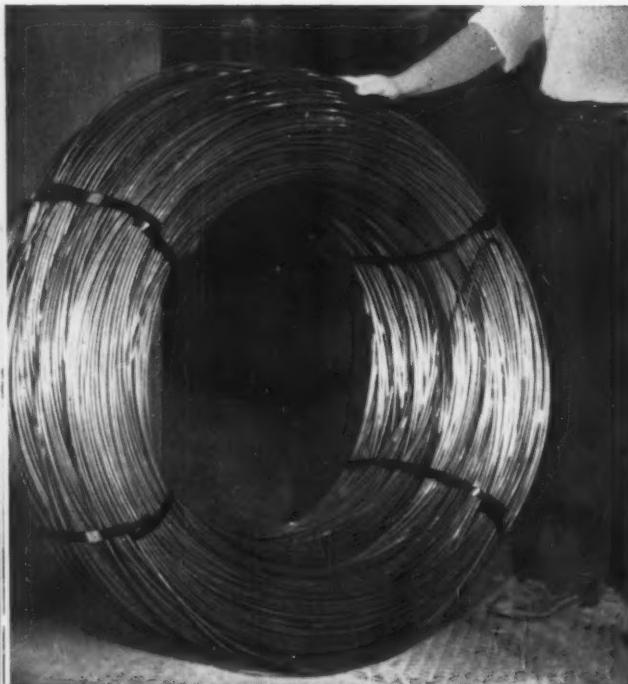
UDYLITE'S CUSTOMER SERVICE TEAM

...to produce better, more saleable products at lower cost



A major appliance manufacturer joins Udylite to improve his product and cut costs. 30 product samples in varying grades of steel are trial plated to compare economy in raw materials with possible savings in plating. Objects: To eliminate polishing lines, save nickel, cut labor costs. Udylite—customer research provides the answers.

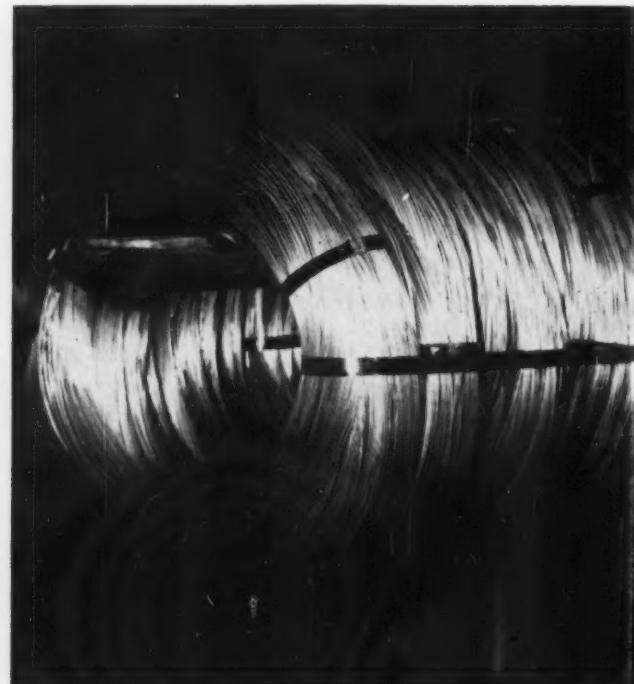
NOW-SAVE TIME with new AS&W



SAVE! HEAVYWEIGHT COILS

save down time, handling time and storage space!

These continuous wire coils, weighing up to 2,000 pounds, speed up mill production by reducing down time for reel changes; save on handling and storage since one large coil takes the place of several smaller ones of same total weight. Heavyweight coils carry no price extra!



SAVE! UNITIZED COILS

cut down handling operations, make more efficient storage!

Where your machines cannot accommodate extra long-run coils, these unit packs offer great saving in handling time and storage space. One unit, containing several smaller coils, is easily handled; takes up less storage space than the same coils stored separately.



SAVE! PLATFORM COIL CARRIER

—ideal for ordering, handling large quantities of wire!

The disposable platform coil carrier, made up of U-shaped wire fastened to a platform, can hold up to 3,000 pounds of special wires in one continuous length.



American

AND SPACE Wire Packages!



SAVE! PAY-OFF DRUMS

speed up handling, storage—protect wire finish!

Long-run continuous coils of wire are packed and delivered in heavy fibre containers. These Pay-Off Drums are easy to handle and stack for storage; ideal for use where wire finish requires special protection from dirt and mill atmospheres. Size of wire, length and weight of coil to your specifications. No return on containers.



SAVE! DISPOSABLE SPOOLS

are easy to handle and stack, take up little space!

These new non-returnable spools can be supplied with any amount of fine wire from 5 pounds to 65 pounds. They are easy to handle individually, and when shipped in quantity are delivered 36 to a pallet, ready to store as is.

Another American Steel & Wire "Customer Service" Feature

These new American Steel & Wire Packages are designed to help you save storage space, to reduce your handling time to a minimum and to speed up your production lines. For more information on these packages and the ways to use them to plan for better warehousing, get in touch with American Steel & Wire. General Offices: 614 Superior Avenue, N. W., Cleveland 13, Ohio.

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American Steel & Wire
Division of
United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

Manufacturers Wire

FOR QUALITY...
PRODUCTIVITY
... PROFIT

MACHINING
AUTOMATED BY GENERAL ELECTRIC



INCREASE WORKER PRODUCTIVITY



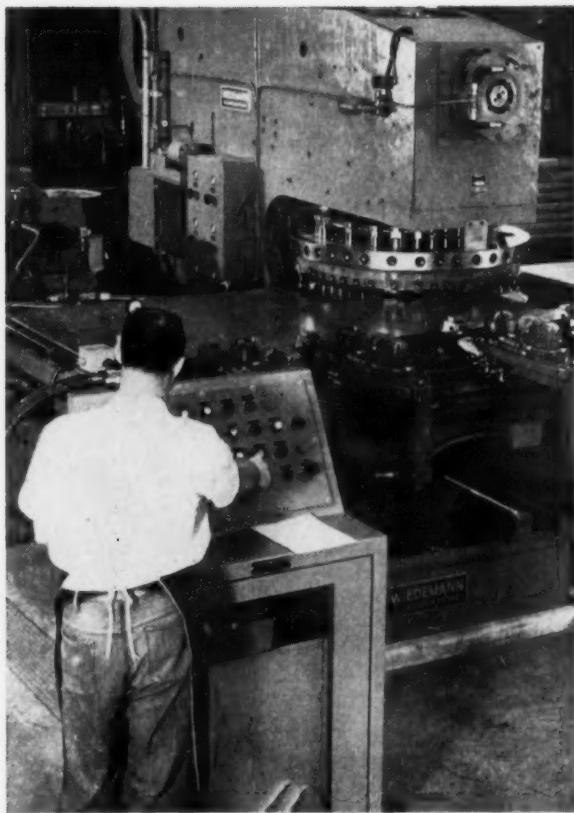
MARK SERIES NUMERICAL CONTROLS... standard, job-proved packages now in use on a wide variety of machines



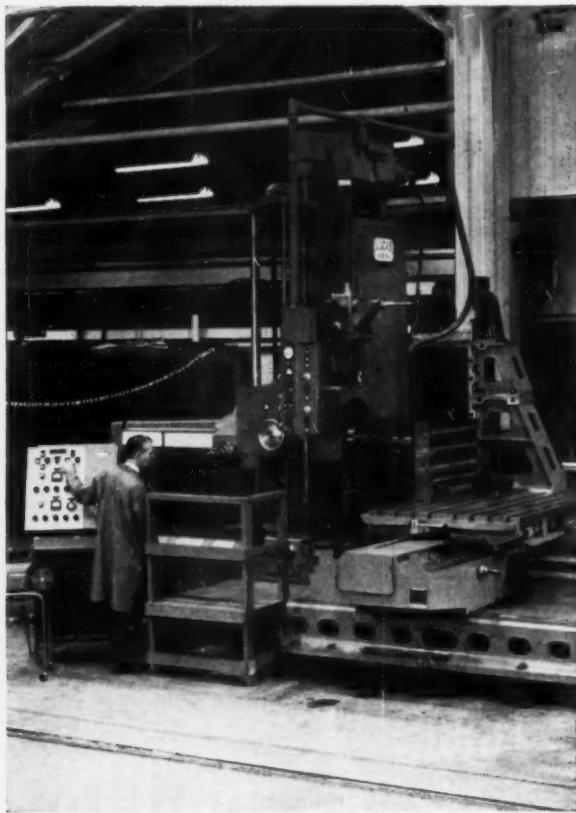
General Electric's Mark series of standard, pre-engineered numerical control packages—with systems for controlling 1 to 5 motions plus machine auxiliary functions—are compiling impressive performance records on scores of machines throughout American industry today.

Machine operation is completely automatic—from punched tape prepared on a standard automatic typewriter. If desired, semi-automatic positioning, useful for prototype work, is obtained with manually set dials on the control station.

Key components of a typical Mark package are a controller, a punched tape reader, operator's control station, servo drives and position-sensing units.



8-TO-1 TIME REDUCTION in press operations is achieved on this 100-ton rotary-turret punch press directed by General Electric numerical control. Rapid positioning of table and turret provides up to 40 punches per minute.



40% AVERAGE TIME REDUCTION for all parts produced on this horizontal boring machine means greater output and better equipment utilization. Lead times are cut by 8-to-1, and non-productive worker time is reduced by more than 60%.

with General Electric numerical control

Boost output of man and machine, reduce in-process inventory

Over the past 7 years, management has seen labor costs increase by 50% with productivity up by only 15%. This profit-cutting gap has accelerated an industry-wide need for production methods such as General Electric numerical control.

Key benefits of G-E numerically controlled machines include increased worker output, increased machine utilization, and reduced in-process inventory in virtually every job.

Manufacturers are now realizing far greater output per man-hour . . . faster "pay-back" rates on machines . . . shorter production cycles . . . and much lower inventory investment—in itself justification for numerical control. Here's an example:

Automatically controlled turret drills are used to produce aircraft-engine accessories at Chandler Evans Corporation, West Hartford, Conn. With numerical control, direct-labor costs have been cut in half! The machine operator—working two machines simultaneously—loads the piece, sets the machine in operation, and all

production is performed automatically. But, increased productivity is only part of the story. Scrap losses are virtually eliminated, average lead times are cut by 6-to-1, cutting-tool costs are 1/40th of former production methods, and tool life is increased from 30 to 1300 pieces per tool—all adding up to expected *annual* savings of \$42,000, more than enough to pay for both machines within two years.

Join with Chandler Evans and hundreds of other manufacturers who are increasing productivity, gaining better product quality, and eliminating tooling cost with G-E numerically controlled machines. See your G-E Apparatus Sales Engineer or machinery builder today. General Electric Co., Specialty Control Dept., Waynesboro, Va.

795-7

Progress Is Our Most Important Product
GENERAL ELECTRIC

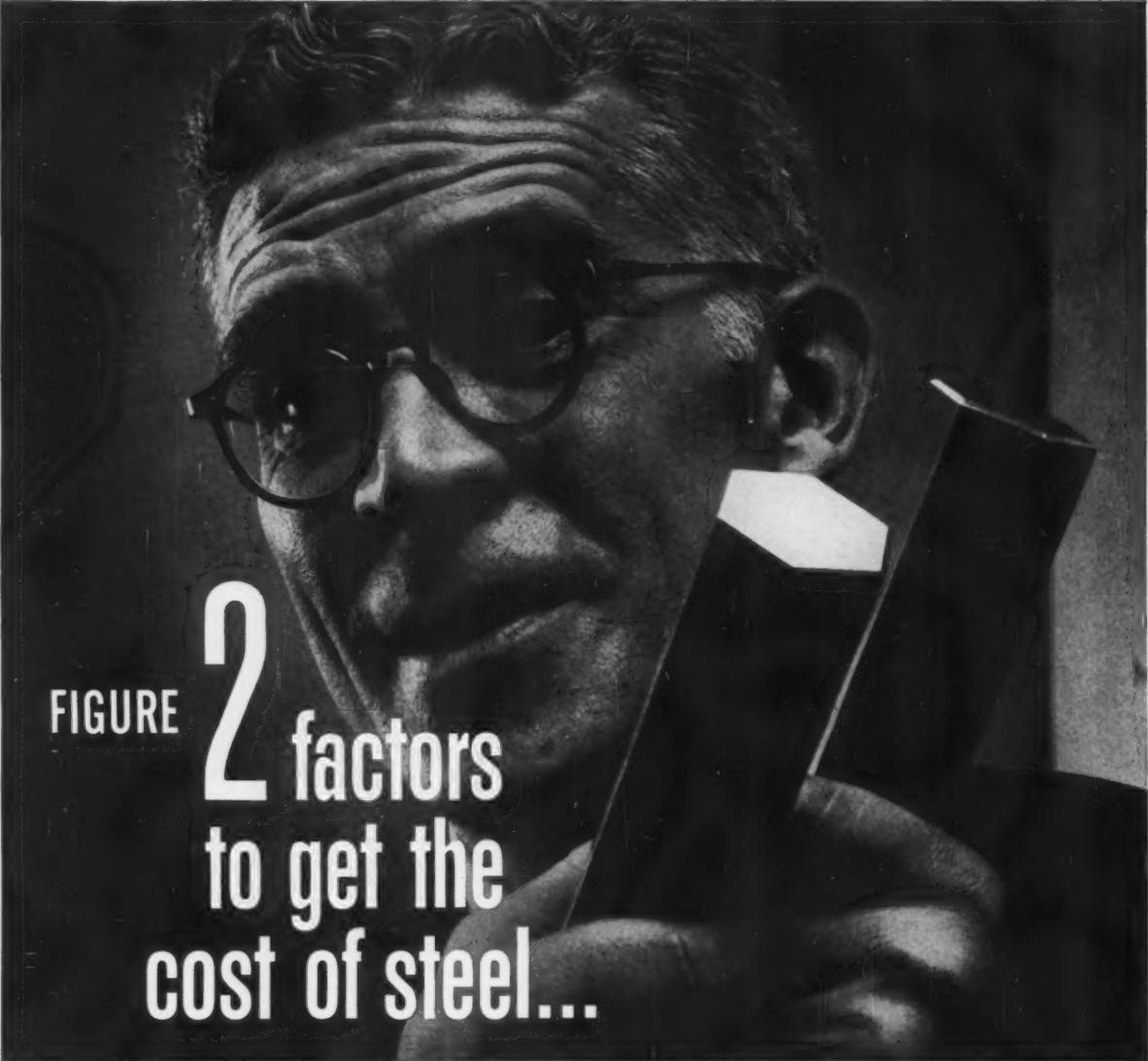


FIGURE 2
factors
to get the
cost of steel...

Price and the COST OF POSSESSION!

If you don't figure the two, you won't have a true picture of your steel costs.

Many smart, informed steel users save money by drawing on the inventory and facilities of their Steel Service Centers. They get technical assistance. And they get steel when they want it, delivered, cut-to-size, ready for production.

This means less capital tied up in inventory. It saves costs of space. Operating costs for storing, handling, cutting

are reduced. Tax and insurance costs are kept to a minimum.

Compare all your costs of inventoried steel with the cost of steel delivered as needed. Use the chart at the right. For more information, get the booklet, *What's Your Real Cost of Possession for Steel?* from your nearby Steel Service Center. Or write to American Steel Warehouse Association, Inc., 540-D Terminal Tower, Cleveland 13, Ohio.



The American Steel Warehouse
...YOUR STEEL SERVICE CENTER

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered	_____
Cost of capital:	_____
Inventory	_____
Space	_____
Equipment	_____
Cost of operation:	_____
Space	_____
Materials handling	_____
Cutting & burning	_____
Scrap & wastage	_____
Other costs:	_____
Obsolescence	_____
Insurance	_____
Taxes	_____
Accounting	_____
TOTAL	_____

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered	_____
TOTAL	_____



Cut filing costs with files that increase filing skill

Time and labor—not the file—are the largest part of filing costs. But the file directly affects the time it takes to finish the job. The file is a hand tool—in effect, an extension of the man. If it reduces his skill, the work suffers and costs go up. If the file matches or increases his skill, he becomes more productive and costs go down. That's why more users choose Nicholson, Black Diamond and X.F. (Extra Fine) Swiss Pattern files than any other. That's why file buyers and users prefer these brands over any others.

X.F. Swiss Pattern

Half Round file, one of more than 6000 Nicholson-made files that can cut your filing costs. We design our files to bring out the man's highest skill. He does his best work when he uses them. They are the most economical files you can buy. Your Industrial Distributor has a full selection. Call him for the Nicholson or Black Diamond file for your purpose.



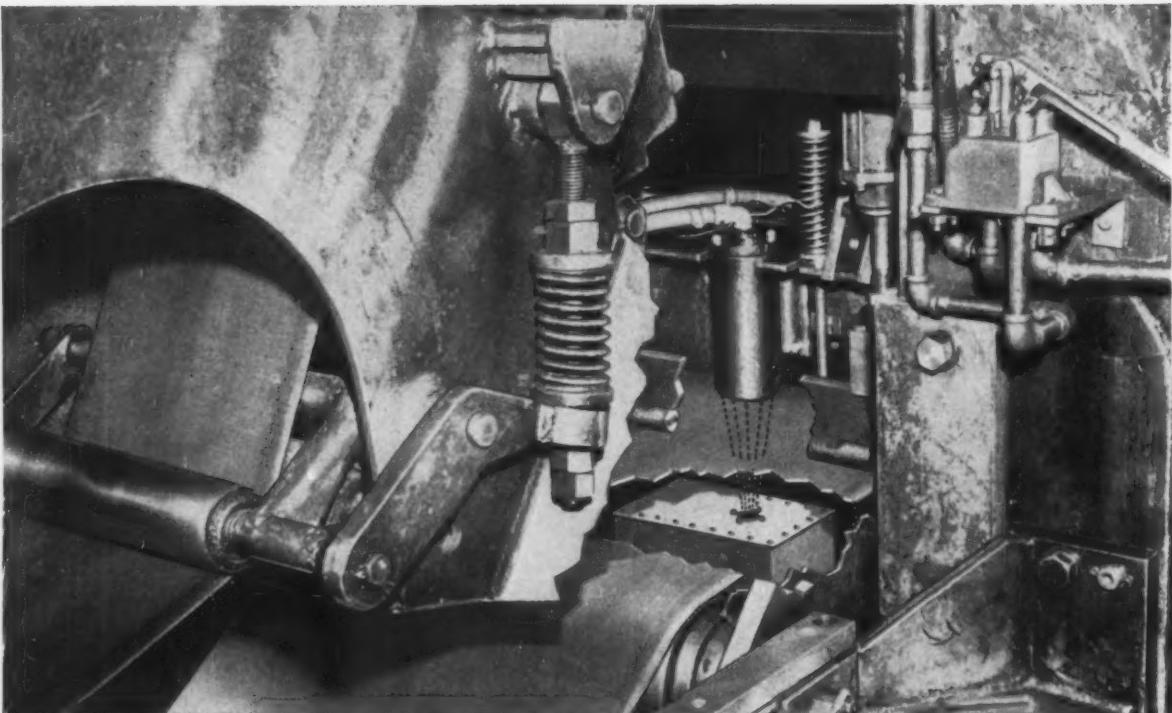
NICHOLSON
NICHOLSON FILE COMPANY, PROVIDENCE 1, RHODE ISLAND



* Industrial Distributors provide the finest goods and services in the least possible time. Our products are sold exclusively through them.

Files and Rotary Burs
Ground Flat Stock

Hacksaw and Bandsaw Blades
Industrial Hammers



Chase replaces pioneer XactRAY with advanced new models—

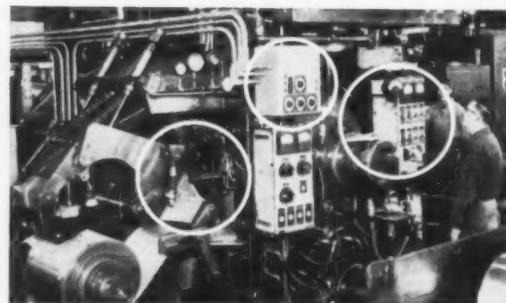
after 10 years' reliable service

Two of the earliest XactRAY non-contact thickness gauges were recently retired from cold rolling mills at the Cleveland, Ohio, plant of Chase Brass and Copper Co., Inc. They were replaced by new XactRAYS—incorporating superior components, such as the low-heat-coefficient Weston Vamistor®, and pulsed X-ray sources . . . greatly reduced in size and total radiation . . . which have been developed in the intervening decade.

This replacement by Chase . . . after ten years' experience with Industrial Gauges non-contact measuring systems . . . is characteristic of the high acceptance XactRAY has earned throughout the metals industry.

The cutaway picture, above, shows one of Chase's new XactRAYS—fitted into limited space, deep within the mill. The X-ray source, consisting of the X-ray tube and high voltage coils, is contained in a small sealed case mounted below the strip. The receiver is mounted well above. The accuracy of the gauge is unaffected by vertical movement of the strip, and the wide airgap also facilitates threading.

XactRAY offers absolute thickness indication. And absolute calibration is built into the equipment . . . is unchanging for the life of the equipment.



XactRAY, today, is the most widely used non-contact thickness gauge in the metals industries. It has been proved accurate and convenient — even with varying non-ferrous alloys. XactRAY is being used, for example, for the automatic control of the thickness of coinage strip for all United States coins — which range from silver to copper-nickel, and bronze.

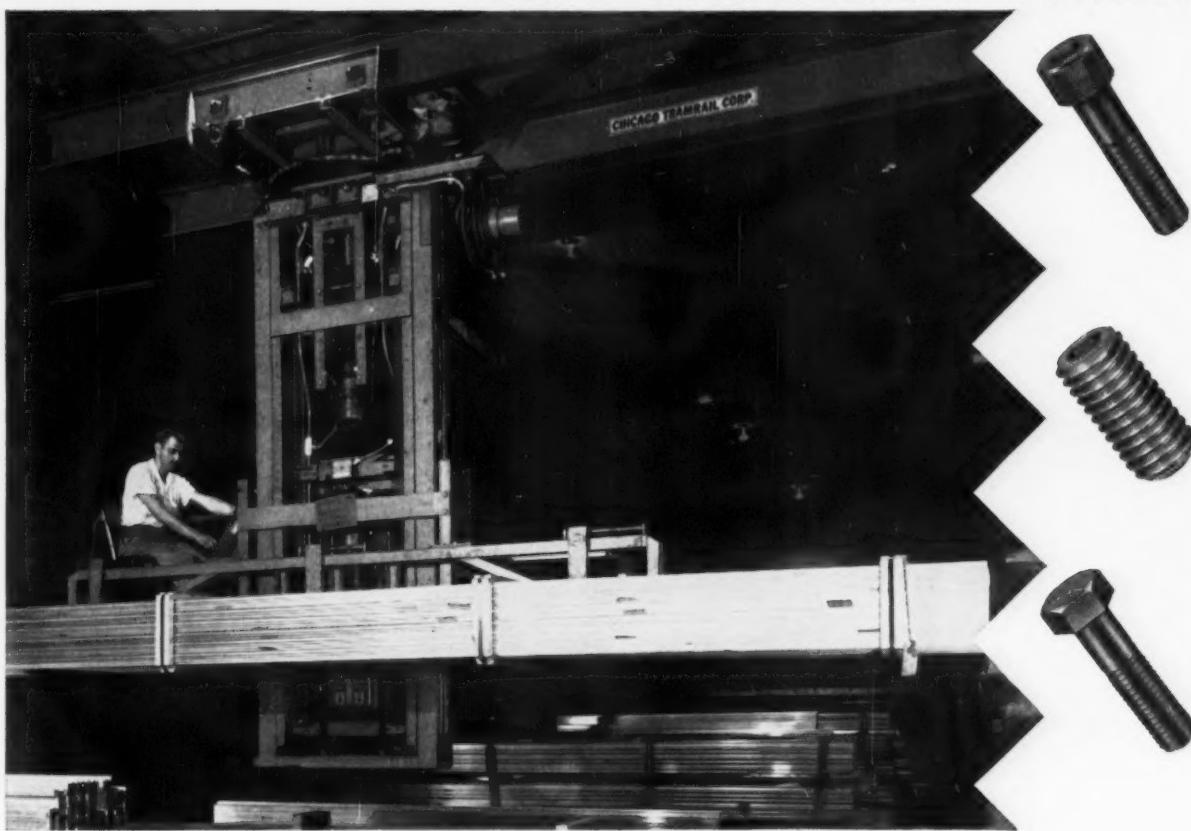
For further information, contact your local Weston representative . . . or write to Daystrom-Weston Sales Division, Newark 12, N. J. In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.

DAYSTROM
WESTON

Industrial Gauges

WORLD LEADERS IN MEASUREMENT AND CONTROL

IT PAYS TO STANDARDIZE ON STANSCREW



17 different Stanscrew fasteners used in Chicago Tramrail's Trak-Rak

"In constructing our complete line of cranes we make no compromise with the most rigid requirements of safety," says S. W. Fountain, Vice-President, Chicago Tramrail Corporation. "Therefore, reliability is our principle reason for standardizing on quality components such as Stanscrew fasteners."

"But Stanscrew gives us more than fast service and reliable products. Their broad line of over 5,000 fasteners offers a wide selection . . . and their fastener specialists and engineers are always ready to assist our design department in determining the strongest, safest, most econom-

ical fastener for every application. For example, in our Trak-Rak stacking crane above, 17 different Stanscrew fasteners are used . . . each selected after careful study for the precise job it has to fill."

Like Chicago Tramrail, many other industrial leaders have learned it pays to capitalize on Stanscrew's backlog of over 80 years of fastener experience. To use this accumulated knowledge in solving your particular fastener problem, just call your Stanscrew distributor. He will quickly arrange for a visit from your Stanscrew fastener specialist.



STANDARD SCREW COMPANY

2701 Washington Boulevard, Bellwood, Illinois

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS

HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT

WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

To Get More for Your Advertising Dollar in Metalworking...



Most metalworking purchase decisions are team decisions.
To help you pinpoint more accurately the buying-specifying team for your type of product, *The IRON AGE* now offers the results of a 2-year National Analysts Study of how metalworking buys the 15 categories of products below—an invaluable aid in planning your marketing, selling and advertising strategy.

Machine tools and other metalworking equipment
Metal cleaning and finishing equipment
Material handling equipment
Steel mill and foundry equipment
Heat treating equipment
Plant service equipment
Welding equipment

Manufactured parts and components
Electric motors and components
Hydraulic and pneumatic components
Power transmission equipment
(except electrical)
Ferrous metals and mill products
Nonferrous metals
Nonmetallic materials
Engineered products and services

Pinpoint the Buying-Specifying Team for Your Type of Product

New National Analysts Buying Influence Study shows how metalworking buys . . . identifies buying-specifying team by title, primary and multiple function, industry and plant size

Your advertising is most effective when directed to the people who buy or influence the purchase of your product. And here is the first truly definitive information on who does the buying for 15 major types of products used in metalworking.

The information was obtained in personal interviews with a probability sample of 2211 metalworking executives in 596 plants. Altogether these executives contributed 1879 hours of their valuable time in what is perhaps the most extensive study ever undertaken of an industrial market. The entire program, which will take 3 years to complete at a cost of over \$100,000, is being conducted by an outstanding research authority, National Analysts, Inc. Detailed purchase-decision data are now available for metalworking as a whole and for these sub-

divisions: SIC 33—Primary Metals; SIC 34—Fabricated Metal Prod.; SIC 35—Machinery; SIC 37—Transportation Equipment.

With this new purchase-decision data, you can now pinpoint the buying-specifying team for your type of product more accurately than ever before. You can determine the relative importance of each executive group, the level of its purchasing responsibility, its specific roles in purchases—data that are invaluable in planning your marketing, selling and advertising strategy. The tables below are only a sample of the wealth of information available to you for each of 15 categories of equipment, component parts, materials and services used in metalworking. The individual studies are available from your IRON AGE representative with a 24-page guide to their use.

Participation of purchase-decision executives by type of purchase

Type of Purchase	All Metalworking SIC Groups	Primary Metals SIC 33	Fabricated Metal Prod. SIC 34	Mach. (except elect.) SIC 35	Transportation Equip. SIC 37
Capital Equipment	88%	93%	92%	88%	80%
Components and Parts	77	76	78	81	77
Materials	67	70	78	71	61
Other Products and Services	62	74	69	62	60

How to read: 88% of all metalworking purchase-decision executives take some part in purchase of capital equipment.

Distribution of metalworking purchase-decision executives — Title by Plant Size

Plant Size	All Executives	Company Officials	Plant & Prod. Mgrs.	Supvrs., Foremen	Eng. & Tech. Executives	Purch. Executives	Sales Mgrs.	All Others
All Metalworking Plants with 20 OR MORE plant workers	100%	22%	35%	8%	14%	15%	2%	5%
All Metalworking Plants with 20 - 99 plant workers	100	44	22	8	10	10	3	3
All Metalworking Plants with 100 - 499 plant workers	100	33	24	6	14	17	3	3
All Metalworking Plants with OVER 500 plant workers	100	14	42	8	14	15	1	6

How to Read: 44% of the purchase-decision executives in All Metalworking plants with 20-99 plant workers have Company Official Titles.

The **IRON AGE**
A Chilton Publication

Chestnut & 56th Sts., Philadelphia 39, Pa.



Headquarters for
Assistance in
Marketing to
Metalworking



Only

IRIDITE®

Process Engineered Chromate Conversion Coatings

Give you 5 additional benefits for Corrosion Protection—Paint Base—Decorative Finishing

1 A COMPLETE PROCESS ENGINEERED LINE

Developed for specific applications, there is an Iridite to provide the finish you desire, fit the equipment you have available and give the performance you require. Most Iridite coatings meet rigid military and civilian specifications.

2 EXPERIENCED TECHNICAL SERVICE

Our large field engineering staff is thoroughly familiar with chromate conversion coatings and related finishing operations. They'll help you check every step in your finishing operation to make sure you're getting the best possible finish on your products.

3 PRODUCT AVAILABILITY

Warehouses located in strategic industrial

IRIDITE—a specialized line of chromate conversion coatings for non-ferrous metals. Apply by dip, brush or spray methods — at room temperature — manually or with automatic equipment. Forms a thin film which becomes an integral part of the metal. Cannot chip, flake or peel. No special equipment, exhaust systems or specially trained personnel required.

If you are using chromate conversion coatings to finish zinc, cadmium, aluminum, magnesium, silver, copper, brass or bronze — consider the above benefits of Iridite. For complete information, contact your Allied Field Engineer. He's listed under "Plating Supplies" in the yellow pages. Or, write for FREE TECHNICAL DATA FILE.

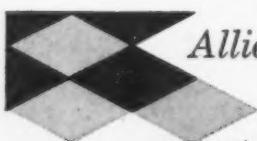
areas enable us to provide you with fast, economical delivery on any Iridite.

4 ECONOMY

The superior performance of Iridite provides low final cost by extending operating life and lowering maintenance costs. In addition, Iridite gives you a finish that adds considerably to the value of your product. There's an Iridite to meet every cost and performance requirement.

5 RESEARCH AND DEVELOPMENT FACILITIES

If you have an unusual application, we will gladly work with you. Our entire staff of experienced engineers and chemists, and our completely equipped facilities are at your service.



Allied Research Products, Inc.

Chemical and Electro-
chemical Processes, Anodes,
Rectifiers Equipment, and Supplies for Metal Finishing

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Chromate
Coatings

IRILAC™
Clear
Coatings

ISOBRITE®
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Chemicals &
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WAGNER
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Equipment

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BRANCH PLANT: 400 MIDLAND AVENUE • DETROIT 3, MICHIGAN
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FORTUNA

alloy steel



A further production unit having been completed at Dillenburg, the Stahlwerke Südwestfalen AG., Geisweid/Western Germany, now operate five modern alloy steel plants, and have thus strengthened their position among the large European manufacturers of special steels.

FORTUNA alloy steels for the general engineering, automobile, aircraft and chemical industries, for tool manufacturers, plastics processors and other exacting applications, are now available in an exceptionally wide range of shapes and sizes on the American market.

FORTUNA
FORTUNA
FORTUNA

Machined and unmachined forgings and drop stampings for all duties and applications. Drawn wire of Thomas and open-hearth steel, of all gauges.

Specialities: piano and spring steel wire etc. Wire products of all kinds.

For further particulars and pricelists please apply to our Subsidiary Company and Sole Export Organization.

ROBERT ZAPP-FORTUNA GMBH.

D U S S E L D O R F / W E S T E R N G E R M A N Y



U.S. Press Room Equipment

and **F.P.P.**
full profit potential

U. S. Press Room Equipment is designed for "F.P.P." — to help make press operations more profitable for you . . . to give to each press maximum flexibility and efficiency.

In many cases, press room productivity depends upon the flexibility of your equipment. The wider the range of material your presses can handle, the more productive and profitable they can be. When you combine this wider range of production with increased efficiency, you are approaching a production standard ideal for press rooms.

It is this standard — which has as its aim the realization of Full Press Room Profit for you — that dictates the manufacture and performance of every piece of U. S. Press Room Equipment.

For example, U. S. Slide Feeds are precision built units for the accurate feeding of coil stock into punch presses. They are adaptable to the feeding of one or more separate strips of wire or flat stock, either of regular or irregular cross section.

U. S. Flat Stock Straighteners and Two-Way Wire Straighteners are perfect complements to U. S. Slide Feeds. When teamed together they guarantee accuracy and contribute to prolonged die life.

Write today for U. S. Bulletin No. 85-I and learn how you can obtain maximum flexibility and efficiency for your present Press Room equipment — to give you your "F.P.P."

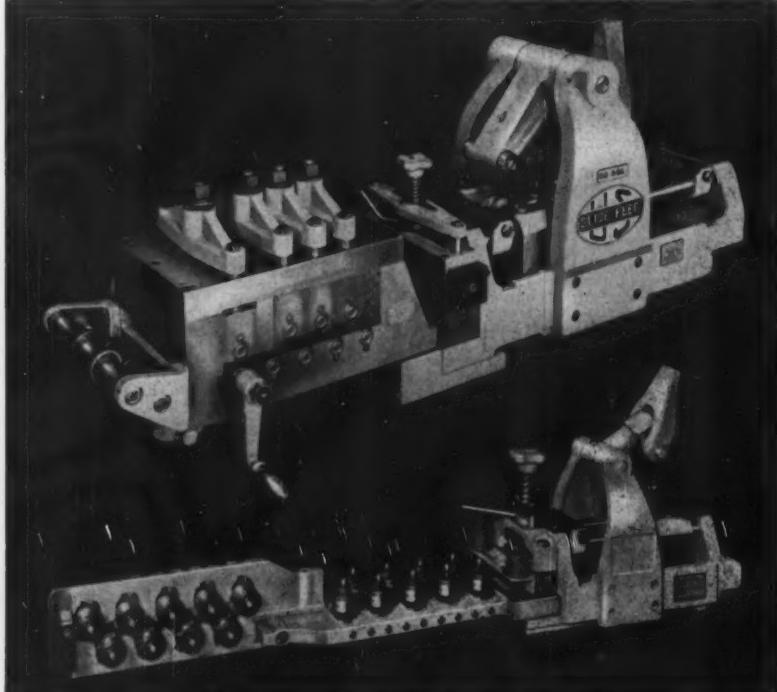


Some typical stock cross-sections readily accommodated by U. S. Slide Feeds.

Below: SF-1 U. S. Slide Feed with SS-07 Plain Stock Straightener on conventional OBI press.

Main Illustration Top: SF-68A U. S. Slide Feed with SS-27 Plain Stock Straightener. Max. width capacity 6" feed length adjustable up to 8".

Lower: SF-0 U. S. Slide Feed with Two-Way Wire Straightener (nine rolls in each plane).



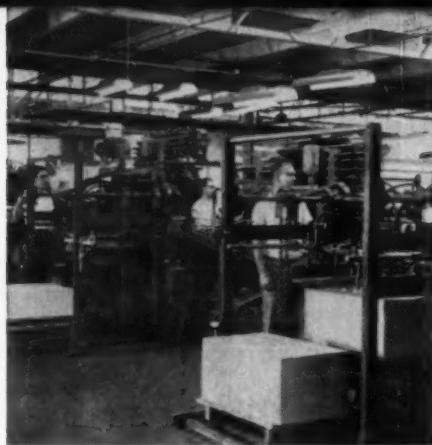
U. S. TOOL COMPANY, INC.

AMPERE (EAST ORANGE) NEW JERSEY

U. S. Multi-Slides® • U. S. Multi-Millers® • U. S. Automatic Press Room Equipment • U. S. Die Sets and Accessories

ial

**Ohio Art pressmen
are busily lithographing
Youngstown Black Plate that
will be subsequently
blanked and formed to
produce their line of
educational World Globes.**



Accent on Excellence

Youngstown black plate



This attractive World Globe—an all-time best seller to homes with growing children—is produced by 50-year-old Ohio Art Company of Bryan, Ohio.

These Globes are of durable metal construction and lithographed in striking full colors. The raw material used? Why Youngstown's Black Plate, of course. It's a quality steel that Ohio Art has found lithographs, draws, forms and blanks to perfection—helps keep the quality of their products at a high level.

Wherever steel becomes a part of things you make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".



Youngstown
Youngstown, Ohio

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Carbon, Alloy and Tool Steel

TRI-TEMP

means you can get **ALL 3 TEMPS** in
BRISTOL Extruded Heading Wire

1

ALL-PURPOSE,
suitable for difficult
extruded rivets, any
general heading.

2

**SCREW
TEMPER,**
specially processed
for struck, slotted
and
roll threaded
screws.

3

**RECESSING
TEMPER,**
satisfies the
requirements when
drilling, recessing
are specified.

Bristol offers three special tempers in cold heading wire and all of these tempers possess uniform flow characteristics.

What's more, you can get them in any of these five alloys: 87-13 . . . 90-10 . . . 85-15 . . . 70-30 . . . 65-35 . . . as well as in nickel silver and silicon bronze.

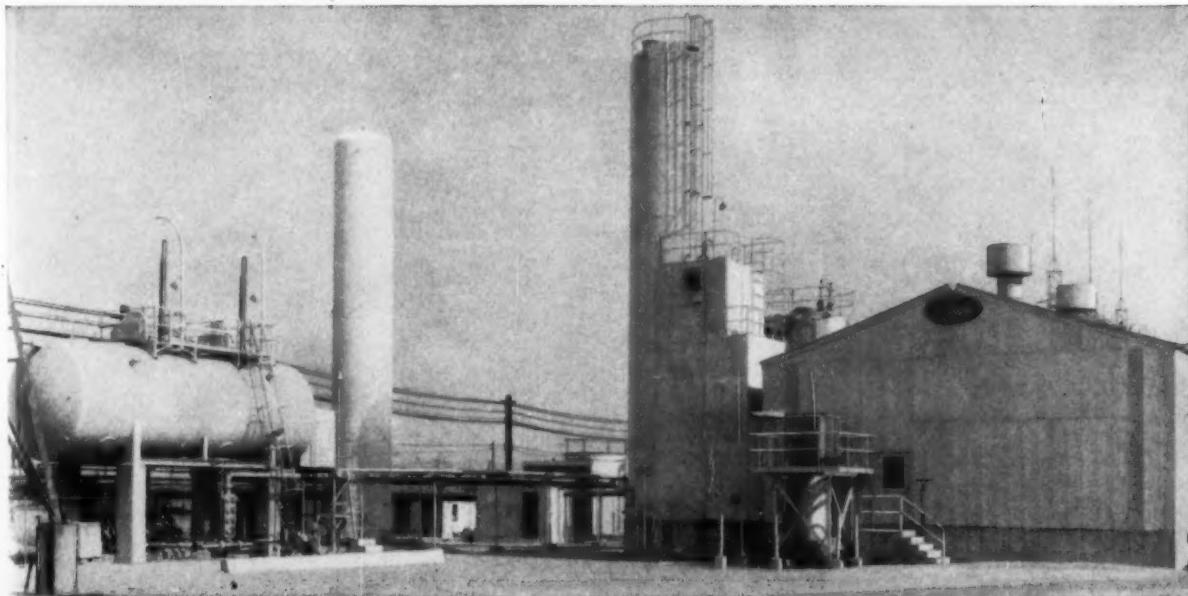
What are *your* requirements?
Just call LUDLOW 2-3161.

**The BRISTOL BRASS
CORPORATION**

Since 1850, makers of Brass strip, rod and wire in Bristol, Connecticut
Bristol Brass has offices and warehouses in Boston, Buffalo, Chicago, Cleveland, Dayton
Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, Rochester, Syracuse

AND FOR BRASS FORGINGS, TOO . . . ACCURATE BRASS CORP. (SUBSIDIARY OF THE BRISTOL BRASS CORP.), BRISTOL, CONNECTICUT.

The exciting new J & L sets its pace . . .



This LINDE On-site Plant is located at J & L's Cleveland Works. Capacity—48,000,000 cu. ft. mo.

and LINDE helps them keep it!

LINDE's Oxygen supply system and scarfing process are geared to production requirements at Jones & Laughlin's Cleveland Works.

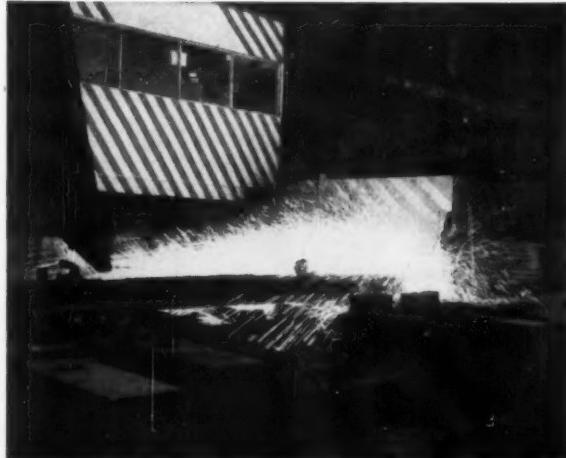
All oxygen demands—in the furnace and on the finishing line—are easily handled by LINDE's On-site Plant. BUT . . . intermittent demands require LINDE's flexible supply system—a reliable producing plant PLUS the ability to deliver "peak" and "back-up" requirements from a nationwide liquid oxygen producing and delivery system.

LINDE's supply system and scarfing process meet fluctuations in production as well. When demand dips the oxygen supply is immediately cut back and the LIN-DE-SURFACER Scarfing Machine is regulated or rolled off the line in a matter of minutes.

Whatever the pace set by J & L, LINDE is there right down the line helping to meet the schedule.

For further information, write Dept. I-71, LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in other principal cities. In Canada: Linde Company, Division of Union Carbide Canada Limited.

The terms "Linde," "Lin-De-Surfacer," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.



A LIN-DE-SURFACER Scarfing Machine, like the one shown here, is used by J & L to condition steel destined for the automotive industry.

Linde
UNION
CARBIDE



one call from you... and they're on your staff!

And they'll bring with them a nearby source of Carpenter tool, stainless and alloy steels. Actually they form just one station in a network that has built itself into a large chain of service-centers by offering and delivering the steels you need when you need them. Make that one action-getting call now. It will pay off in new operating flexibility for you. Just like having a complete warehouse in your own plant. The Carpenter Steel Company, 121 W. Bern Street, Reading, Pa.

Carpenter STEEL

mill-branch warehouse service

mill-branch warehouses, offices and distributors in principal U. S. cities
consult your local telephone directory



**3 short steps to
longer tool life with the**

Brush Surfindicator



The Brush Surfindicator can increase your tool life *up to 50%* by setting microinch specifications on

- (1) The *cutting edge* of the tool for optimum cutting efficiency.
- (2) The stock surface to arrive at the most efficient cutting *angle* of the tool.
- (3) The surface finish to determine exact *point* in the production run at which to *replace* the tool.

Your production runs can be lengthened—machine shutdowns and rejects reduced—your quality maintained with the Brush Surfindicator.

A demonstration can be arranged in your plant. Call us—set a date—we'll be there!



— **brush** INSTRUMENTS

37TH AND PERKINS

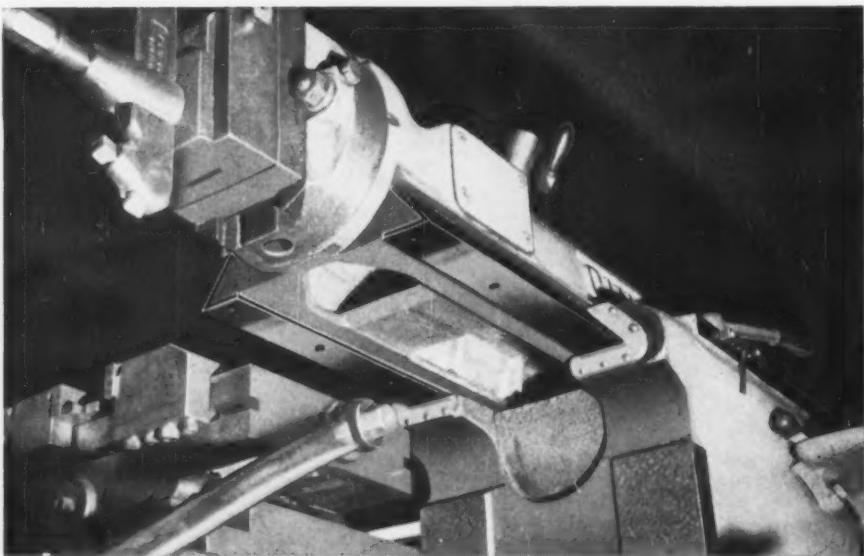
DIVISION OF
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CORPORATION

CLEVELAND 14, OHIO

WEAR PLATES

ANOTHER *Lamina* BRONZE-PLATED PRODUCT

Lamina bronze -
plated wear plates
used on shaper ways.



Lamina bronze -
plated wear plates
used on grinder ways.



Lamina bronze-plated wear plates and their many uses are completely described in Bulletin WP-58. Send for your free copy.

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USERS OF NEW
ROEBLING HERRINGBONE* WIRE ROPE
HOLD THESE TRUTHS
TO BE SELF-EVIDENT...



That Herringbone is the most practical and needed wire rope development to come along in years.

Herringbone, the regular lay and Lang lay rope, is actually two-ropes-in-one rope. Thus, the qualities that make these two ropes good ropes, combine to make Herringbone excellent.

HERE'S WHY:

The steel core of Herringbone provides the ideal support for the two pairs of Lang lay and one pair of regular lay strands used in its construction. In addition, the outer wires are heavier for extra abrasion resistance, and good flexibility is maintained by the finer wires inside. This combination of features enables Herringbone to give longer service in most applications.

Herringbone has been used on a wide variety of excavating equipment and tough hoisting jobs with impressive results. Its applications are practically unlimited on installations which call for all-steel ropes and on many where fiber core ropes are now being used. Another of Herringbone's added attractions is the fact that it eliminates the necessity for stocking Lang lay rope for one job and regular lay for another.

Your Roebling Distributor has Herringbone right now. He has, also, copies of a brochure describing Herringbone, the newest Roebling Star Performer. If you wish, write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for literature and anything you'd like to know about Herringbone.

*Reg. App. For

ROEBLING

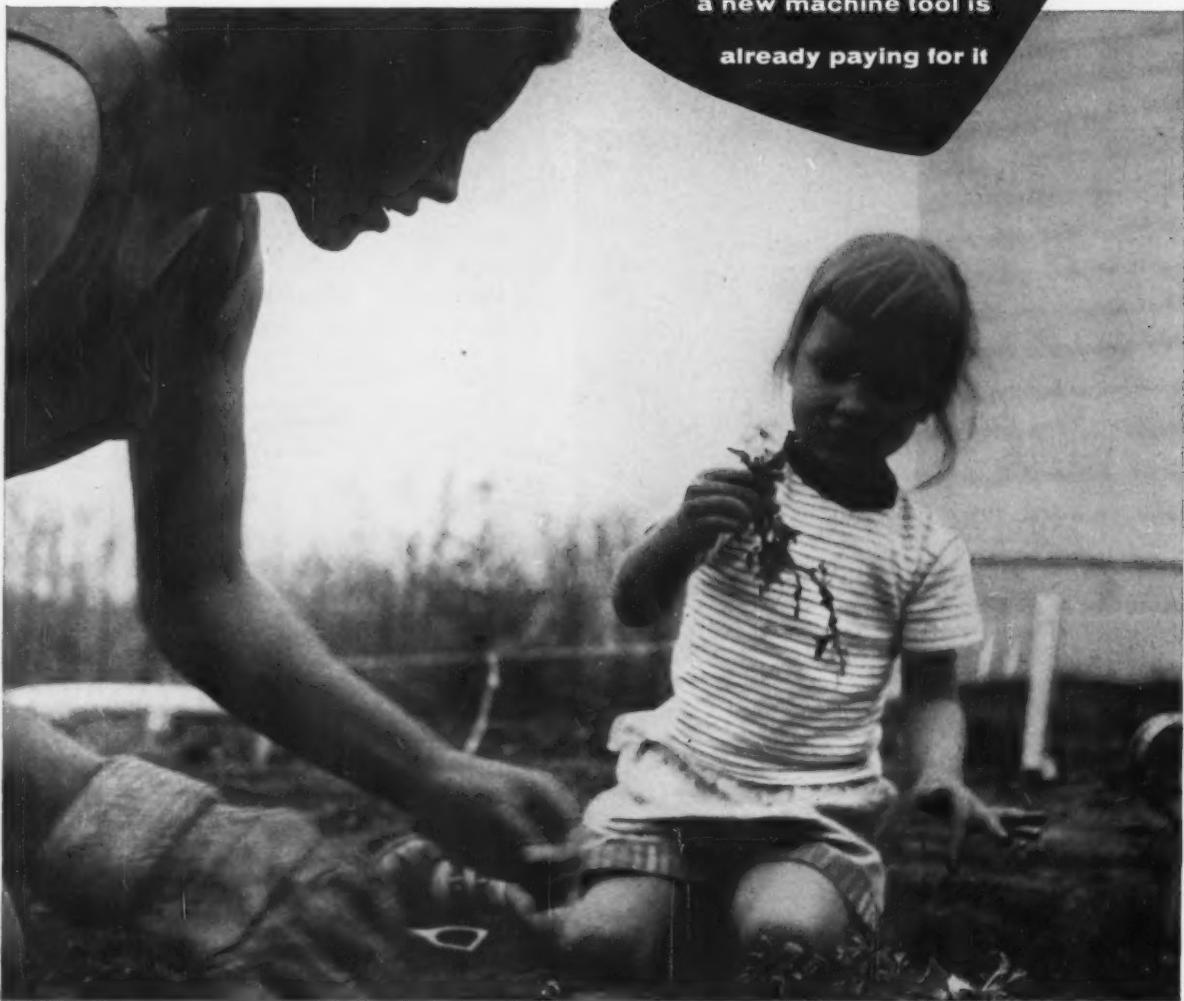
Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation



NC.
GAN

JONES & LAMSON MACHINE COMPANY

the man who needs
a new machine tool is
already paying for it



Spring planting...1949

Just ten short years ago, but a lot of changes have taken place.

Except for Mother, who is every bit as attractive, nothing has remained the same. The garden is now long-established and flourishing, and Daughter is entering college in the fall.

In Dad's shop, things are quite different, too. Labor rates, prices of raw materials and overhead have kept climbing constantly.

Those once-new machines are still running O.K., and seem to have plenty of usefulness left in them. The big hitch, though, is that their performance standards were based on

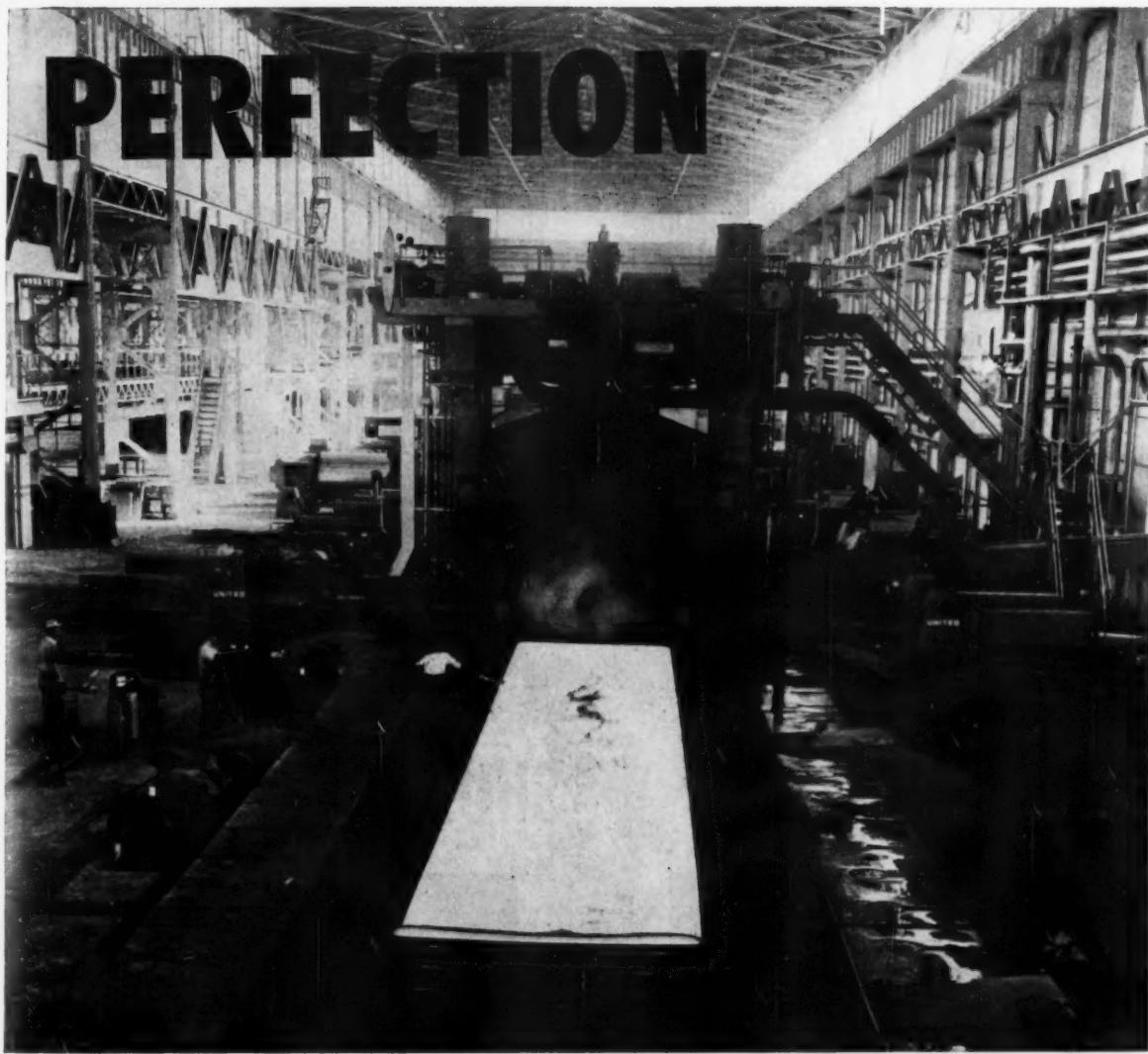
the costs of *ten years ago*. With today's increased costs, the *profitability* of these machines is in serious doubt.

The cost analyses Dad is now completing show very clearly that successful production under *today's* conditions requires *modern* equipment. He used J & L's new "Avoidable Costs" Replacement Formula. It's simple, clear cut and realistic, and avoids the fallacies found in other replacement formulas.

Write for your copy.

Jones & Lamson Machine Company, 511 Clinton Street, Springfield, Vermont.

Turret Lathes • Automatic Lathes • Tape Controlled Machines • Thread & Form Grinders • Optical Comparators • Thread Tools



Fuji's modern 160" plate mill

From Pig to Finished Products

FUJI IRON & STEEL CO., LTD., a giant among Asia's steelmakers, has made vast strides towards achievement of perfection in all phases of iron and steel production. FUJI STEEL products can be depended upon because rigid control is maintained over quality at all essential points.



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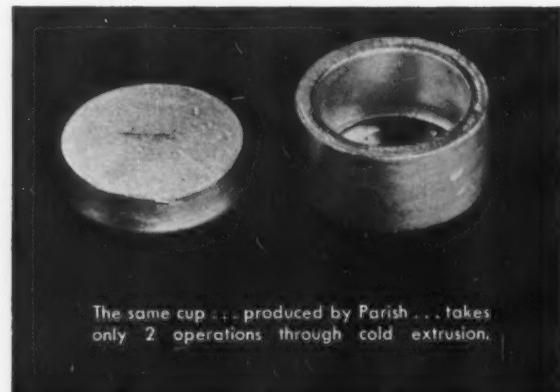


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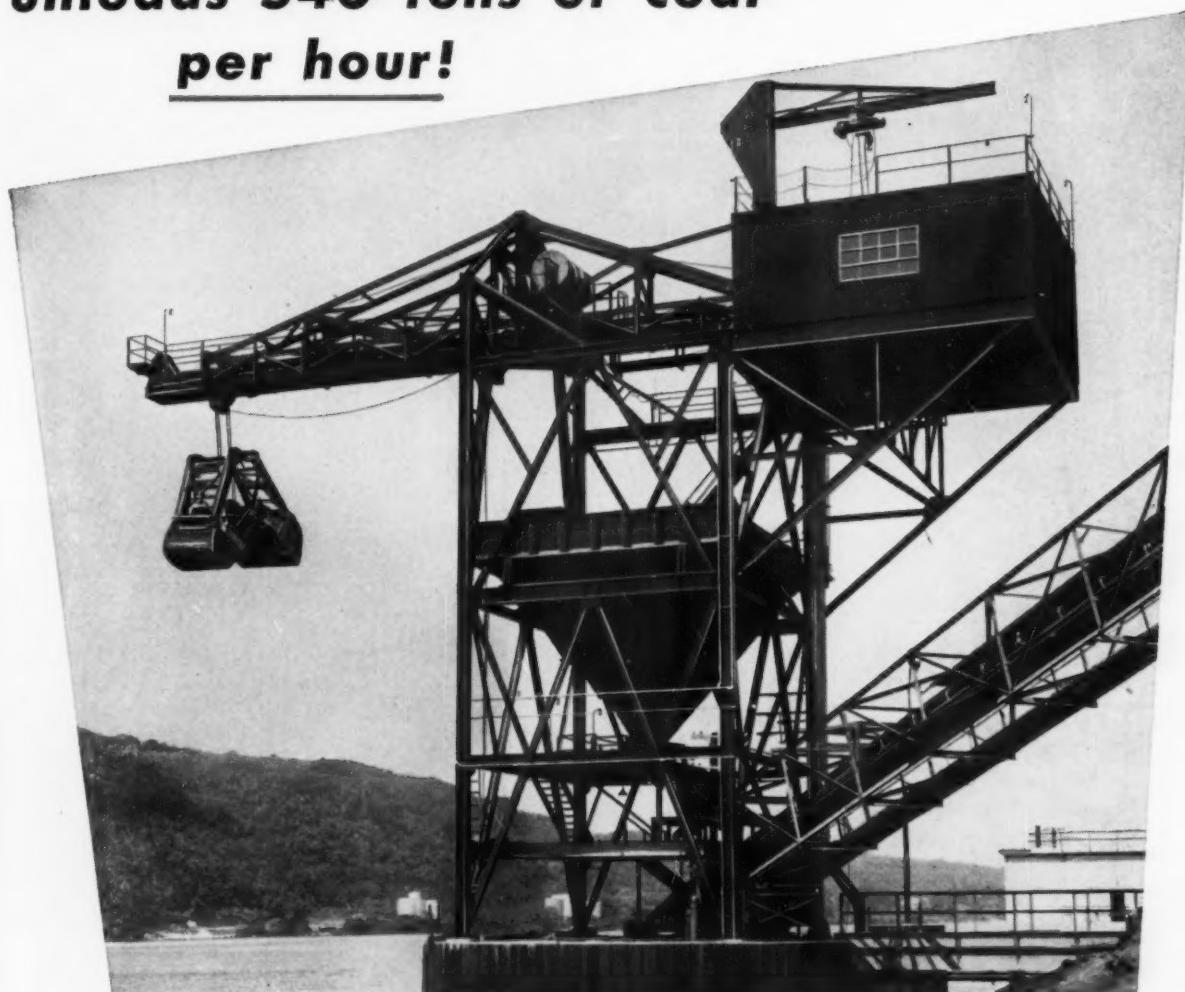
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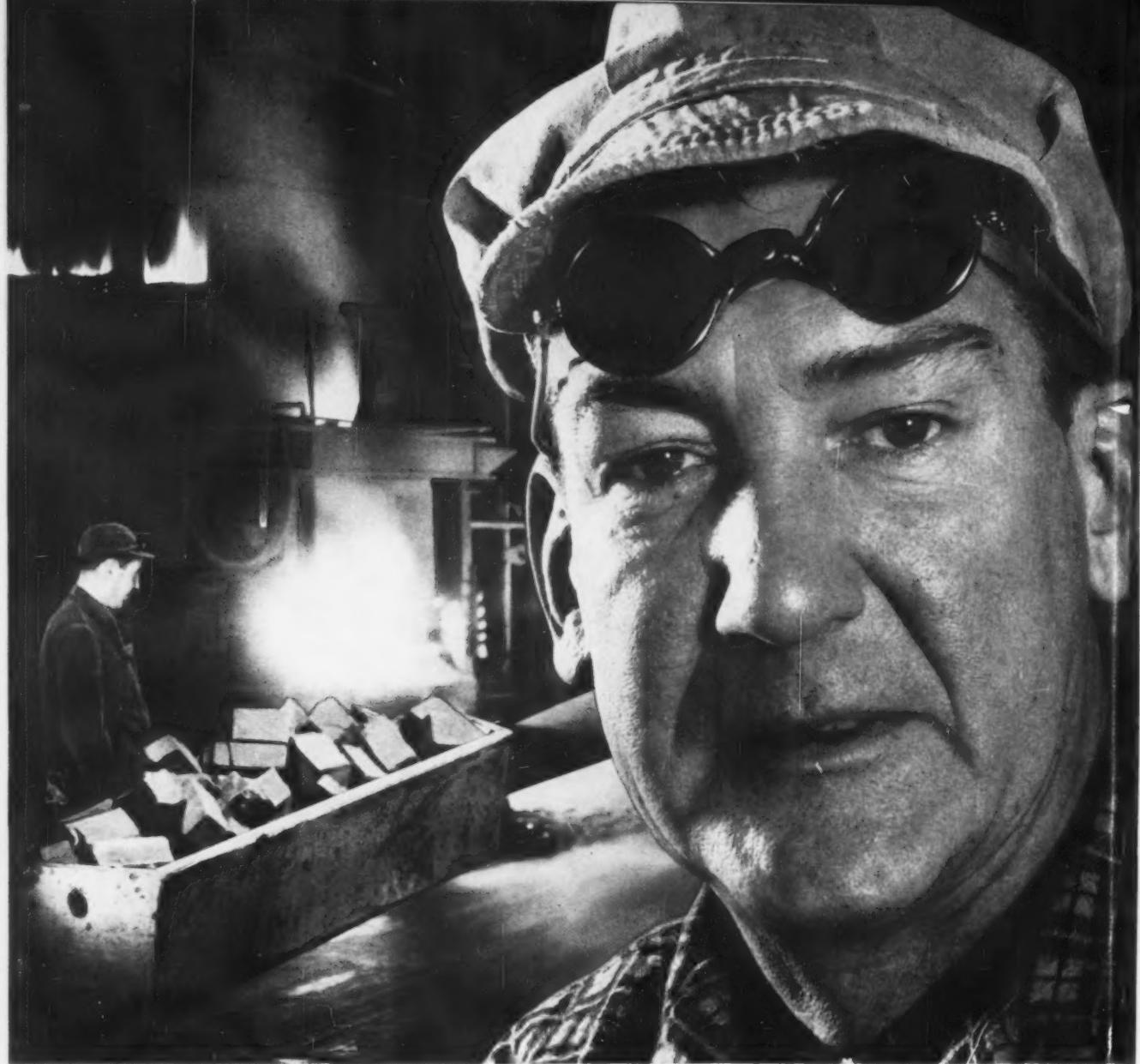
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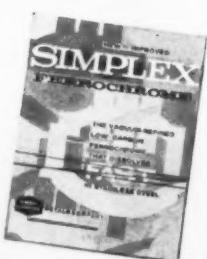
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MARKET-PLANNING DIGEST

CONSTRUCTION IS GIVING BIG LIFT to the economy. In terms of dollars, building is expected to hit record high of about \$53 billion. This compares with about \$49 billion last year.

MARKETING RESEARCH may well be the fastest-growing area of business. A study by American Marketing Assn., shows: Nearly six times as many marketing research departments were started in 1953-57 as in the previous 20 years.

RUSSIANS PUT BEST FOOT FORWARD at New York science, technology, and cultural exhibit. But the Soviets are not pushing hard for export business. Exceptions are machine tools and some scientific equipment.

MANY PURCHASING AGENTS say they are not doing any foreign buying. A survey by the National Association of Purchasing Agents puts some 39 pct in this class. As an offset, 30 pct say they are buying more than they did five years ago. Another 29 pct are buying at the same rate; only 2 pct are buying less.

GOOD BUSINESS HEALTH OVERSEAS is definitely hurting U. S. foreign sales, Eisenhower Administration admits. U. S. exports this year are running well below 1958 total of \$17.8-billion.

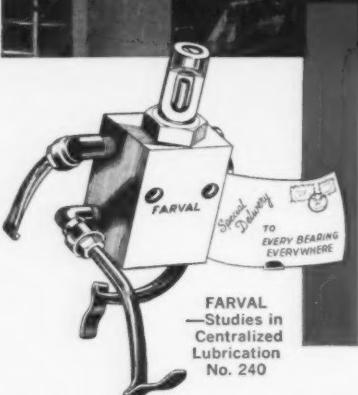
LOOK FOR MORE AND BETTER RESEARCH in automobile tire industry. Five leading tire companies have underwritten a "fundamental" research program at University of Michigan. Emphasis will be on extending life of tires on smaller diameter car wheels.

JAPANESE COMPETITION for Canadian seamless tube market is sharpening. Japanese salesmen are moving into Canada in force. Main objective is large diameter line pipe.

BIG MILITARY NAMES will continue to land influential jobs in industry. Defense Secretary McElroy will fight for right of military brass to take procurement jobs in industry after retirement.

1961 FEDERAL BUDGET is shaping up as the largest in history. Inside word is that it will exceed \$80 billion, more than the 1960 budget. Administration is giving up trying to boil the fat out of non-defense spending. It blames Democratic Congress.

INDUSTRIAL FURNACE MARKET shows signs of tightening up. Manufacturers predict more extended deliveries as backlogs rise. There's also a strong prospect of price increases if raw material costs go up after steel labor settlement.



Farval automatic systems lubricate Geneva Works 45-inch slabbing mill

The fast and synchronized action of this 45-inch slabbing mill at the Geneva Works of Columbia-Geneva Steel Division, U. S. Steel Corporation depends to a large extent on properly lubricated bearings. Sixteen Farval systems automatically lubricate more than 1,000 bearings throughout the slabbing mill. Other Farval systems serve more than 6,000 bearings at the Geneva Works. Lubricant in the correct amount is delivered at regular intervals under the most rugged conditions and combinations of heat, shock and vibration.

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Exhibition Shows USSR's Goals For Industrial Development

New York display of Soviet progress overdoes it in typical exhibition style.

But it also shows that the Russians have the ability to produce and develop in areas where they want to concentrate.

■ What can you learn about Russian industry from the Soviet Exhibition of Science, Technology and Culture?

Probably the first lesson is that what the Russians want to concentrate on, they can do very well.

Models of the Soviet Sputniks, on prominent display at the Exhibition in New York's Coliseum, are dramatic evidence of that. And so is the model of the TU 114 airliner, which brought First Deputy Premier F. R. Kozlov non-stop from Moscow to New York.

Beneath the Tinsel—But underneath the super-showmanship (where the Russians also show surprising Madison Avenue-type skills) some rough edges begin to show.

For example, the show looks like a great exhibit of consumer goods. But when pressed, the Russians admit to very low production rates and luxury items are far out of the grasp of the average family.

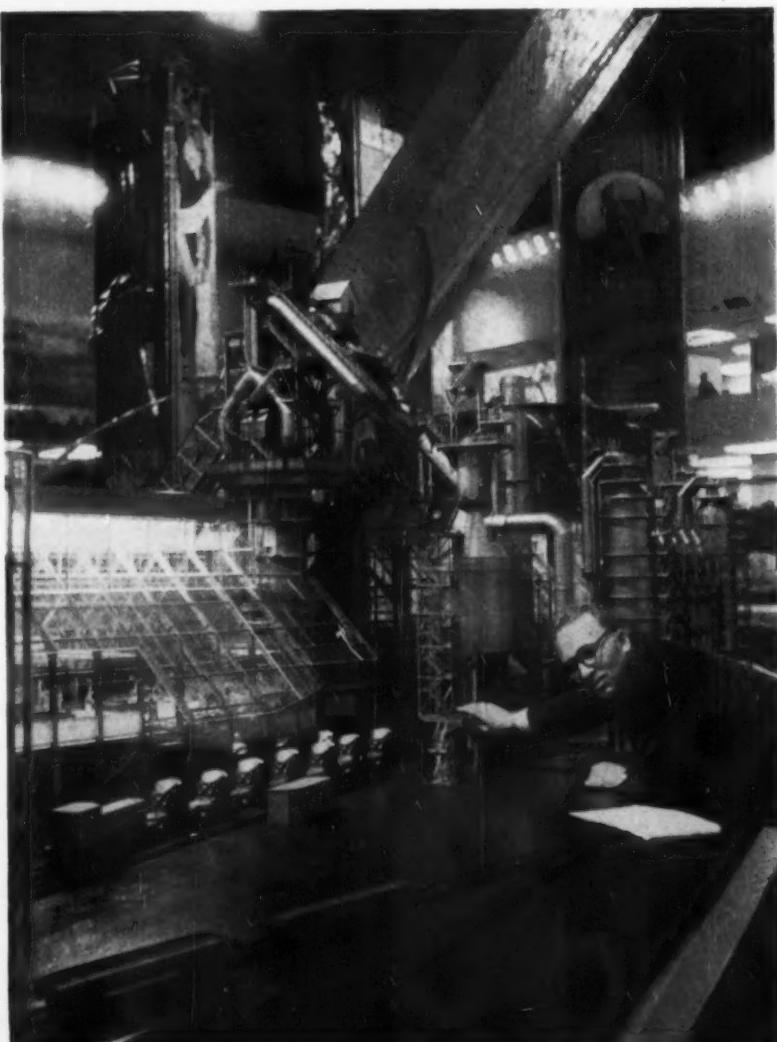
And many models of industrial plants, airports and installations, are still far in the future and do not represent actual conditions. But, it is an exhibit and shows only the best. A visitor has to make allowances.

Eager to Tell—But there is a wealth of information, and the Russians have gone all out by staffing

their exhibits with scientists, engineers and metallurgists. Some speak fairly good English; others use interpreters. All are armed with facts and figures.

A specialist at the power display reports, for instance, that in 1958

the USSR had 53 million kw installed capacity and will produce 233 billion kwh. At the end of the 7-year program in 1965, capacity is expected to be 110-113 million kw, production 500-530 billion kwh. (U. S. capacity, 1957, was 145.7



MODERN MILL: Steel mill shown in model form is not of one in actual production. But it reflects progress Russians are making in steelmaking.



MACHINE TOOLS: Three dimensional milling machine. Ten of them are said to be operating in USSR.



ELECTRONICS: Part of airport control equipment is checked by technician at electronics display.

million kw and still growing.)

Steel Display—The steel industry display features several techniques which are not standard American practice. One shows how a new blast furnace is built on tracks next to an old one. When the old unit is dismantled, the new one slides into place. Reported savings:

75,000 net tons of iron production.

An openhearth furnace model shows double ladle practice: Two steel ladles and two slag ladles tapping a 500-ton furnace. Ladles have double stoppers to permit bottom pouring of two sets of four ingots at a time.

Continuous Casting—The scientific exhibit shows a pneumatic controller designed to find and maintain optimum operating conditions of a furnace. It differs from a controller designed merely to maintain certain pre-determined conditions.

A model of a 4-strand continuous casting unit should be noted. It is twice the size of the pilot unit the Russians are now running near Moscow. But a metallurgist at the exhibit says it is now being built at the Staline Works in the Donbas Basin.

Machine Tools—Soviet machine tools will hold few surprises for American production experts. But they do show the emphasis being placed on automatic programming, electronic inspection, and ultrasonic machining.

Three of the four metal-cutting tools on exhibition are equipped with tape controls. All operate on an open loop system with no feedback. One vertical milling machine is designed for three-dimensional machining of die contours. About ten units of this type are said to be in use in Russian plants.



FOR THE FARM: Russians claim to have mechanized 98 pct of all plowing. Trend is toward constructing standard, interchangeable units.



FOR SALE: Export sign in background shows USSR intent to export equipment like this electronic bearing

inspector. Last year the U. S. imports from Russia totaled about \$64 million, exports to, \$113 million.

Mechanize the Farm—The automotive and agricultural exhibits are a study in contrast, but in contrast of intent, not so much of production.

Under the 7-Year Plan, the Russians apparently intend to build more tractors than passenger cars. The program is to mechanize the agricultural industry before giving the Russian a car of his own.

Among the self-propelled combines and other agricultural units, a trend to unitize and standardize equipment is evident.

Auto Facts—The Russians produce about 130,000 passenger cars a year for sale. They range from the 45 hp Moskvich to the 220 hp V8-powered Zil III.

Russians in attendance say a Moskvich station wagon would cost an American \$2800, at the 10-to-1 ruble tourist exchange rate. The official rate, however, is four rubles for one American dollar. This would put the cost to the Russian a prohibitive 28,000 rubles or \$7000.

Like most products on display, even consumer goods like radios and TV sets, the Russian cars are sturdy and made to last. The Rus-

sians have no intention as yet of entering into rapid obsolescence, characteristic of the American economy.

Nuclear Emphasis—The Exhibition makes a big pitch for its Atoms for Peace program. Nuclear energy displays take up as much floor space

tion getter is a 10-in., fully-transistorized portable set, small enough to carry easily in one hand. A catch for a U. S. TV viewer: It has only one channel.

Trade Potential—About 3.5 million TV sets are in operation in the USSR, an exhibit spokesman says, and plans are to double that figure in the 7-Year Plan. There are 65 TV stations. Only two channels are in Moscow, so the one-channel portable is not out of line by Soviet standards.

There is little apparent push for export trade, except machine tools (see picture) and some scientific equipment. The Russians say most of the products on display can be purchased and will quote vague prices, but shy away from definite purchase methods.

Last year the U. S. exports to the USSR totaled only \$113 million. Imports were only \$64 million. Although the Russians show interest in certain industrial products, few authorities look for a great increase in trade between the U. S. and the USSR in the near future.

NEXT WEEK Russian Tools

Machine tools are high on the list of products the USSR wants to export. A special picture report on Russian machine tools is featured in next week's issue.

as any single feature. The USSR has under construction a total of 4.5 million kw capacity in nuclear power units. They are experimenting with different types of units and, as one spokesman said, nuclear power is "still a big industrial power experiment."

Among consumer goods, TV sets make up a big display. One atten-

Steel Talks: Behind the Scenes

Here's the Lowdown on the Back Room Maneuvering

There's more to the steel labor contract negotiations than meets the eye.

Front men are backed by a small army of advisers in devising and carrying out bargaining strategy. —By Tom Campbell.

■ There is more at stake in the steel labor-management hassle this year than appears on the surface. Many of the scenes in the drama seem to repeat those of former years but there are many new angles. What has gone on behind the scenes—away from reporters—probably tells the story.

The steel management side made extensive preparations for the negotiations; some say as far back as a year ago. But the real intent to go in there fighting started a minute after the last big deal was signed in 1956, after a 5½ week strike.

1959's Union-Management Crisis

Blood Pact—Of course the steel side—led by 12 steel companies—could not prepare for everything. But it did a pretty neat job. The "Big 12" appear to have signed a blood promise to act as one and not to chicken out no matter what happens. Of course they have done this before. But this year the main participants feel that they are hogtied together on a "brinksmanship" stand.

So miracle No. 1 on the steel side is the solid front put up through four negotiators against steel labor. Mr.

Roger Blough, U. S. Steel chairman, is the top fellow in this 12-company group. The other 11 companies watch him like a hawk. Not because he might backtrack but because there is no use kidding anyone: The U. S. Steel Corp. is the kingpin in this hassle. That doesn't mean Mr. Blough "pulls the strings." He just happens to represent the company which has always been—and always will be—the whipping boy for a succession of Administrations and Senators.

Steel's Top Bargainers—The steel negotiators—who so far have been able to avoid being bypassed—consist of three lawyers and one engineer. The latter, R. Conrad Cooper, U. S. Steel v. p., was picked for the job because he knows how to say "no" consistently and because he knows what steel's bargaining and labor troubles are all about. R. Heath Larry of U. S. Steel is a lawyer and veteran of the protracted 1956 negotiations. Mr. Cooper is chairman of the joint labor and management negotiators and chief negotiator for the steel side. John Morse is a close-mouthed negotiator and top-notch private lawyer who represents Bethlehem Steel Corp.—and of course all 12 steel makers. H. C. (Lefty) Lumb, a newcomer at the top bargaining table, is a vice president of Republic Steel Corp.

Boys in the Back Room—Behind the 12 presidents and their negotiators are great numbers of "helpers." These people help keep operation "answer back" afloat, make suggestions, rewrite releases, criticize what is happening, and offer advice. It is all very complicated but it is working, and that's the test. Some people in this great human mechanism worry once in a while how the "flexibility" button can be pushed. But that, too, is taken care of.



BARGAINERS: These men have been trying for two months to agree on a new contract affecting 500,000 workers in basic steel. Left to right, Howard Hague, Arthur Goldberg, David McDonald, for steel labor; John Morse and R. Conrad Cooper for the steel companies. Missing are R. Heath Larry and H. C. Lumb for steel industry, and I. W. Abel, for union.

The Labor Team—There are two sides to this story of course. The labor side is playing at the same old stand. Dave McDonald, steelworker chief, is running the show for the union although he does meet once in a while with the union's Wage Policy Committee (171 men). His sidekicks are I. W. Abel, secretary-treasurer, and Howard Hague, vice president, both of whom have been through this "thing" many times before. Chief counsel to the union is able Arthur J. Goldberg who engineered the recent White House rescue mission (aided of course, by the friendship President Eisenhower has for Dave McDonald, as well as the desire vice president Nixon has to become President in 1960).

Tough on Union—Because of the new type of bargaining (The IRON

AGE, July 2, '59, p. 40), the union side has been quite frustrated at times. In recent days each side has taken the other's measure. The union side has and must use all its ammunition to get to first base.

Dave McDonald has met with the President, gotten a letter from him; supped with Democratic Senators (who are quite powerful in the rat race for 1960 potentials), controlled himself with the press, appeared relaxed when tense, and optimistic when downhearted. In fact, Dave has exhausted most of the things a labor leader can do and is now reduced to taking his men out on strike or giving in to a contract calling for a small increase. The possibility of giving up or changing the "local practices" clause — a clause which is complicated and involves

the number of men to be kept at work after changes are made in plant, machinery or techniques—is in the picture too.

The Inner Sanctum—Actual negotiating takes place in the Presidential suite of the Roosevelt Hotel. There the steel side has a private room, as does the union. The bargainers face each other across a table in the living room.

Here in this room have been the real highlights. It has been said that there has been no bargaining. But there has been. It all depends on your definition of what bargaining is. The union says that Mr. Cooper does not bargain because he says "no" so many times. The steel side says you can bargain down as well as up. The truth: Of course there has been bargaining.

Odds Favor Steel Labor Peace

■ This is the critical week in the steel labor hassle. Last week was Dave McDonald's blood bath. By getting the wildcat strikes in hand he proved he had "control." But another extension would be another story—he might be unable to keep the steelworkers from going off on a long bitter strike.

In some steel circles last week's episode did not go down very well. Some steel people breathed a little easier when the wildcatters obeyed their international president—and the local boys who run the show at home.

What It All Means—What does all this mean about a settlement? For one thing, some of the leaders in the 12 steel companies may have failed to realize that if no agreement is reached late this week or next Monday at the latest, the President is the one who is going to be embarrassed. He came into the picture expecting a settlement. If that doesn't come, Ike's next move could be away from the steel companies.

Both the steel side and the labor side last week walked the tight rope—with more balance than either has used in years. Once again the atmosphere changed abruptly. This suggested a meeting of minds soon that would result in an agreement which would be less than either wanted but just about what the White House would like to see.

Settlement Versus Strike—The steel side was busy most of late last week and early this week weighing the cost of a long strike against making an offer of moderate settlement. The labor side was weighing the future cost to Dave McDonald and to the union if a strike was called against accepting a small wage or fringe increase along with some other concession, such as retention of the cost-of-living clause.

Neither side was off the wire but neither had stumbled to the point both fear—a point of no return which might erupt into something not foreseen by either union or management. There will still be

some last minute haggling and probing for weakness this week. But since time is running short and since the President spoke more than a week ago, there could be a "break" before the early part of next week.

Odds Favor Settlement—As The IRON AGE has repeatedly stated, a non-inflationary agreement (whereby both sides bow to the President's command to fight inflationary forces) is still a probability before there is a crippling strike. In this case the odds are 7 to 4 for a peaceful settlement. The short part of the odds—if they take over—means a long and perhaps uncontrolled steel strike. That is something the White House does not want, the union doesn't want; and now it is something some of the 12 steel companies do not want. It was with this knowledge that the steel labor and management negotiators dodged the press late last week when they took off over the long weekend for rest—and "meditation."

Construction: Key to New Boom?

Home and Road Building Outlays Already Hit New Highs

Construction, the No. 1 user of steel, may approach 1957's record steel consumption.

And the upturn in industrial construction is yet to come.

—By G. J. McManus.

■ Construction's lopsided boom is being watched by many as the key to the whole recovery.

With overall building outlays already at a record level, a sudden revival of industrial construction could blow the lid off a lot of supply lines.

Costs Going Up—Direct effects would include:

1. Higher prices for heavy construction. The Austin Co. attributes to "moderate wage increases" a one-point advance in its industrial building costs index on July 1.
2. Longer waits for heavy construction.
3. Stronger demand for heavy steels.

Indirect effects would be felt in every part of the economy. Construction is now a \$50 billion industry. It is the biggest single consumer of steel. From the standpoint of dol-

lar sales, it is four times bigger than automotive. It has the mass to exert crushing force with just a slight movement.

Offsetting Cycles—In the past an internal see-saw has tended to modify construction swings. Housing and other types of light construction generally respond first to a recovery. Heavy industrial building usually trails by about a year, not hitting a peak until home building tapers off.

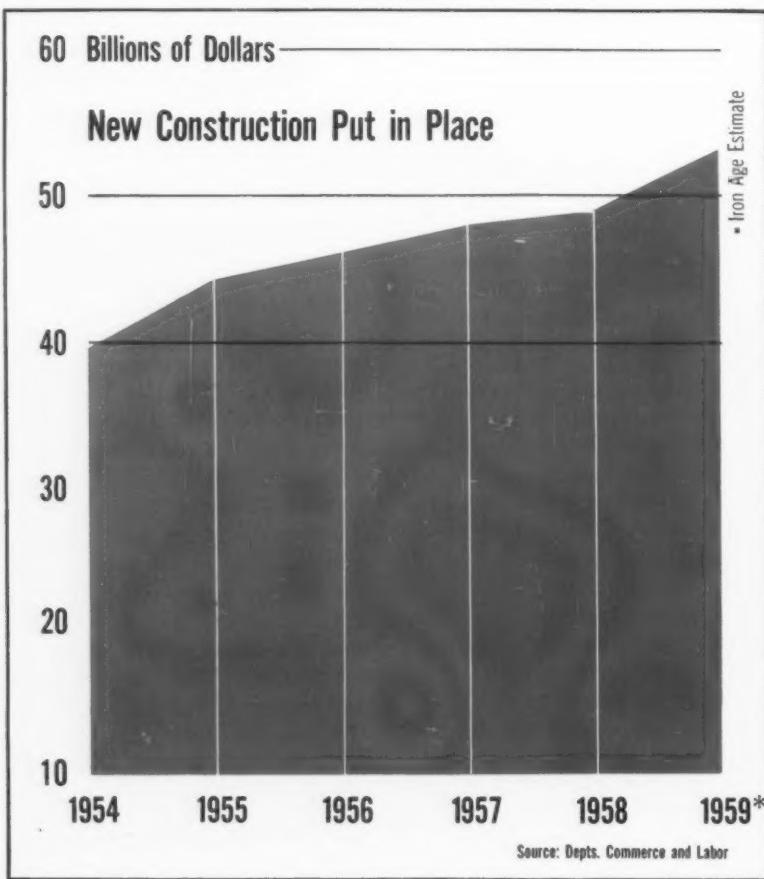
The current upswing has followed this pattern. Industrial construction began falling off last year. It is currently running 31 pct under the early months of 1958. But at the same time there has been a steady climb in outlays for homes, stores, schools, hospitals, highways, and others.

Estimates Fall Short—Net effect of these opposing trends has been a slight increase for overall construction in 1958 and a sharp gain in the early months of this year. A record \$19.7 billion went into new construction during the first five months of this year. That was 13 pct more than the same 1958 period.

The size of this jump suggests light construction may be gathering steam rather than slowing down. At the start of the year, Commerce Dept. estimated housing would run 13 pct ahead of 1958. It is currently 36 pct ahead of last year. A 12 pct advance was predicted for highways this year. May figures show highway spending running 22 pct ahead of 1958. Overall construction is 13 pct ahead of last year. The estimate was 7 pct.

Small Users Add Up—So far, heavy industry has only felt the sidewash of the construction boom. For example, relatively little steel goes into homes (175 tons per \$1 million spent) or highways (520

Heading for a Record Year



tons per \$1 million). By sheer force of numbers, however, these lighter applications are chewing up a lot of metal.

Steel mills estimate 24 million tons will go into construction this year. That will be only a shade under the peak consumption of 1957. If there is no steel strike, builders figure to take another 1 million tons for inventory.

Still to Come—With all this steel going just for light projects, what happens when the tonnage building starts? The average new plant takes 1500 tons of steel for every million dollars spent. On this basis an extra 1.5 million tons of steel would be needed if industrial construction suddenly rose to 1957 levels.

In answer to this, steel men say, first of all, that plant construction won't take off overnight. They feel new-plant projects are moving ahead faster than published figures indicate. Capital spending estimates are being revised upward from \$30.5 billion (annual rate) in the first quarter to \$33.5 billion in the third quarter.

Upsurge in 1960—However the real boom in plant construction is still a year away, says one building specialist. By that time, home construction will be tapering off. Overall steel consumption will rise to 25.5 million tons in 1960; the steel mix will show more plates and structurals, fewer sheets and other light products.

Steel mills feel they have ample finishing capacity for construction needs well into the future. United States Steel's big new structural mill at Chicago is about ready to start setting records. Bethlehem Steel has added 1 million tons to its structural capacity since 1953. Inland Steel and others have beefed up structural mills. Total industry capacity is estimated at 8 million tons.

Structural fabricators, like steel mills, are avoiding bullish talk on construction. But the first real upturn in heavy construction can be expected to bring longer lead times and higher prices.

Tariff Hearings

Metal Duty List Will be Simplified

On July 14, the U. S. Tariff Commission will hold open hearings in Washington on its proposals for a simplified schedule of tariffs for metals and metal products. What it recommends will be sent to Congress and probably become law.

The project of simplifying our tariff system was authorized by Congress in 1954. The lawmakers noted that U. S. tariff schedules had been growing in all directions since 1930.

Stress Simplicity — The Tariff Commission's job, in the main, was to rearrange the schedules logically. It reduced the number of schedules, or categories, from 16 to eight. All duty free items, no matter what they were, have been on Schedule 16. Now the Commission suggests there be no duty-free list. All such items are listed in their proper categories and noted as duty free.

The Tariff Commission was told to suggest no rate changes except where deemed absolutely necessary. For the most part they were able to do this. But there are some notable exceptions (See box).

One Tariff spokesman says that none of their suggestions violate any U. S. trade agreements, or will likely hurt any U. S. industry.

Another Tariff official says most rate changes suggested are very slight. The few that are more substantial apply to items that are disappearing from world trade.

Good Work — The Commission has done a very business-like job in lining up its recommendations. Consciously, they have stuck to readily understandable terms in defining items. And they cut out much of the chaff. Example: There are no listings for solder. This is now considered an alloy and so listed.

But there are problems not solved yet. Biggest headaches are new items on the market since 1930.

Copies of the suggestions of the Commission, Schedule 6 — Metals and Metal Products, may be studied at field offices of the Dept. of Commerce. Metalworkers can also contact The Secretary, U. S. Tariff Commission, Washington, D. C.

Suggested Duty Changes

The Tariff Commission isn't suggesting many rate changes for Metals and Metal Products—Schedule 6.

But here are some that might cause a reaction from metalworkers.

Example: The current schedule lists 18 varieties, and 18 rates, for **round iron and steel wire**. The new, suggested, schedule includes all these in three categories.

Example: Under the current system **heavy pipe** may be imported as either pipe and tubing, or structural. The rates differ. Now, the Tariff Commission wants pipe and tubing considered only as pipe and tubing.

Example: The Tariff Commission says **alloys** should be rated by the weight of their constituents. Under this system the largest amount of metal in an alloy would determine duty. Now the key is chief value.

Example: In bringing rates for **ores, mattes and residues** up to date, the Tariff Commission is suggesting departure from traditional allowances for metal content lost in refining.



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High Court Upsets Security System

Defense plant workers will probably be permitted to confront and cross-examine their accusers when their security clearance is questioned.

Government and congressional leaders are expected to come up with a new security review system quickly to replace the system struck down recently by the U. S. Supreme Court.

The high court simply ruled the present security system had never been legally authorized by either Congress or the President, but was merely set in motion by the Defense Dept.

The eight-man majority, headed by Chief Justice Earl Warren, ruled only on how the program was established. Justice Warren also took exception to security determinations reached after procedures "which failed to comport with our traditional ideas of fair procedure."

The majority pointed out that the ruling did not say whether the same procedures in which government evidence and witnesses are not subject to cross-examination would be legal if authorized by either the President or Congress.

Test Case—In the case, William L. Greene, an aeronautical engineer, was dismissed from an \$18,000-a-year post as president of a Maryland engineering research firm. The government argued, and dissenter Justice Tom Clark agreed, that a person does not have "a constitutional right to have access to the government's military secrets" and the government has the duty and power to safeguard its confidential information.

The ruling opens the possibility that hosts of persons denied security clearance in past years—and as a result have lost jobs—may begin filing for back wages.

The government has two choices. It can have either the President by order, or Congress by legislation, simply officially authorize the same security system which has been in

effect. Or it can set up a new system.

Renew Renegotiation

Defense contractors will be subject to government renegotiation of their profits for another three years.

President Eisenhower is expected to sign a compromise measure extending the Renegotiation Act through June 30, 1962. This permits the government to recapture what it considers excessive profits on defense prime and sub-contracts.

As finally approved, the extension directs the Senate and House Armed Services Committees to make thorough studies of overall military procurement practices, and the Senate-House Internal Revenue

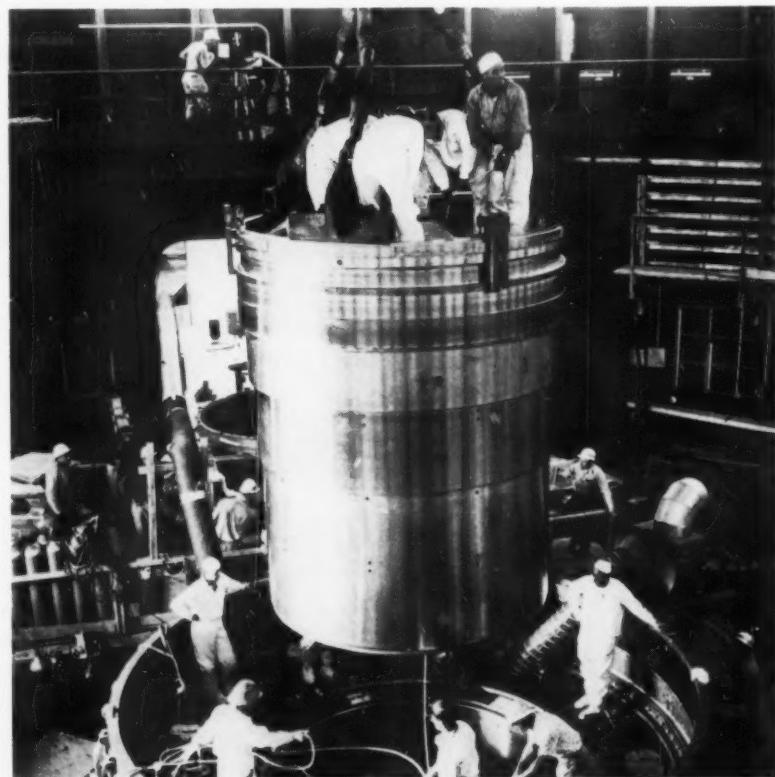
Committee to study renegotiation policies and procedures. The results of these studies would be available in 1962 if Congress decides to consider extending the act again.

Labor in Cleveland

Wage increases for over 27,000 hourly workers in Cleveland this year have been held to an average 6.89 cents per hour, exclusive of fringe benefits and cost of living adjustments. Total of 140 agreements were signed.

Associated Industries of Cleveland, which negotiates for many of the companies, announced the weighted average settlements ranged from no increase to 17 cents per hour.

A Whopper of a Stopper



PLUG: Technicians carefully "cork" the 91-ton reactor vessel of the Enrico Fermi Atomic Power Plant, Lagoon, Mich., with a 106-ton rotating shield plug. Both the vessel and the plug were built by the Chattanooga Div., Combustion Engineering, Inc. The plug is precision finished stainless steel over carbon steel and canned borated graphite shielding to prevent radiation leakage. It takes up 12 of the 36 ft depth of the reactor vessel. The plant is the U. S.'s first full-scale, fast-breeder nuclear power plant.

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INVENTORY

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With new IBM inventory control methods, you not only answer questions like these precisely, but you also keep inventories at optimum levels . . . reduce shortages . . . cut inventory carrying charges . . . get automatic calculation of materials requirements and ordering quantities.

Results of such control? One manufacturer cut a 24-day inventory reporting cycle down to 24 hours with an IBM 650. Another realized substantial savings by cutting his inventory investment in half with an IBM RAMAC® 305.

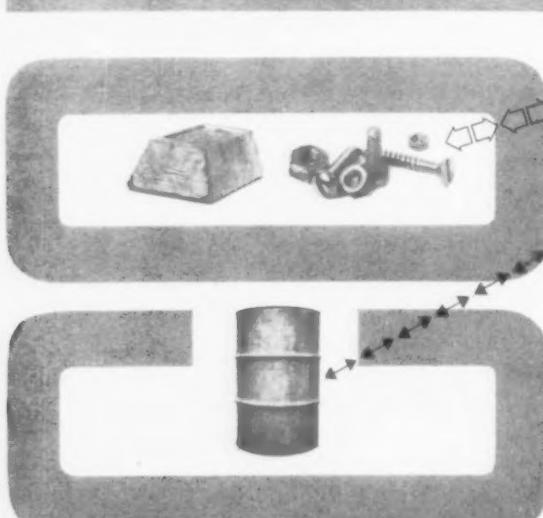
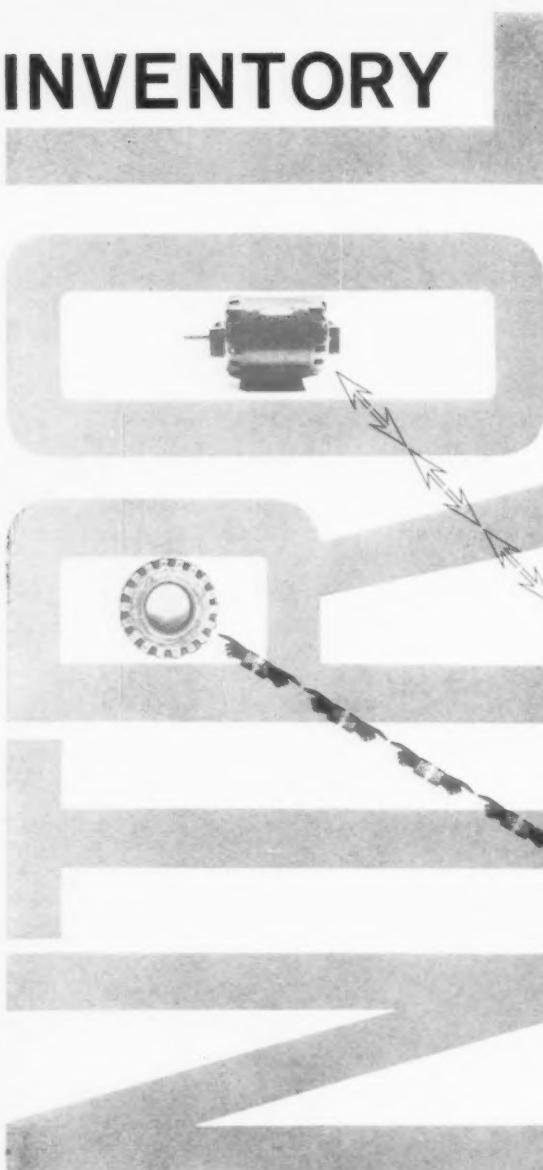
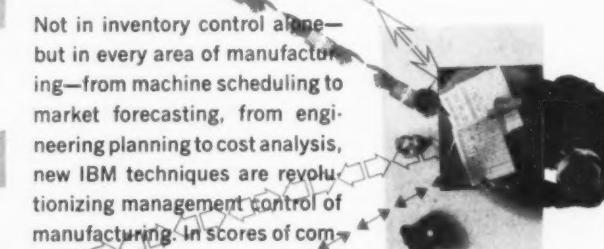
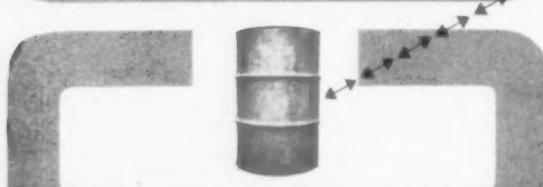
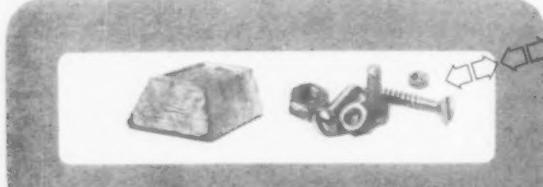
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DATA PROCESSING



Karl Schwartzwalder

In Search of Flexible Ceramics

Ceramics have for many years been an important material to science and industry.

At AC Spark Plug Div., Mr. Schwartzwalder is seeking to add to their value.

To Karl Schwartzwalder, one of the country's outstanding ceramic scientists, ceramic materials are a key to technological progress.

Winner of the American Ceramic Society's John Jeppson award in 1959 for outstanding accomplishments, and a past president of ACS (1956-57), Mr. Schwartzwalder is a good-humored, shirt-sleeved scientist who says:

"In the field of aircraft, missiles, and solar energy, the future rests on the ability to produce materials that will withstand higher and higher temperatures."

Coming Uses—Some of the prospects he sees for ceramics:

Use in aircraft applications where, in a few years, temperatures of 3000° to 3500°F may be common.

In the automotive field, the extremely high compressive and transverse strength of ceramics has great promise.

Indications are that space may be the "universal solvent"—and the container for that solvent will be a ceramic material.

Likes His Lab—At AC Spark Plug Div. of General Motors Corp., Flint, Mich., where he is research director, Mr. Schwartzwalder's office is just a step away from a laboratory. He spends much of his time in the lab.

Over the years he has received 34 patents.

During World War II, Mr.



KARL SCHWARTZWALDER: Research will find the answer.

Schwartzwalder was an Atomic Energy Commission consultant and is still on the AEC committee on industrial information.

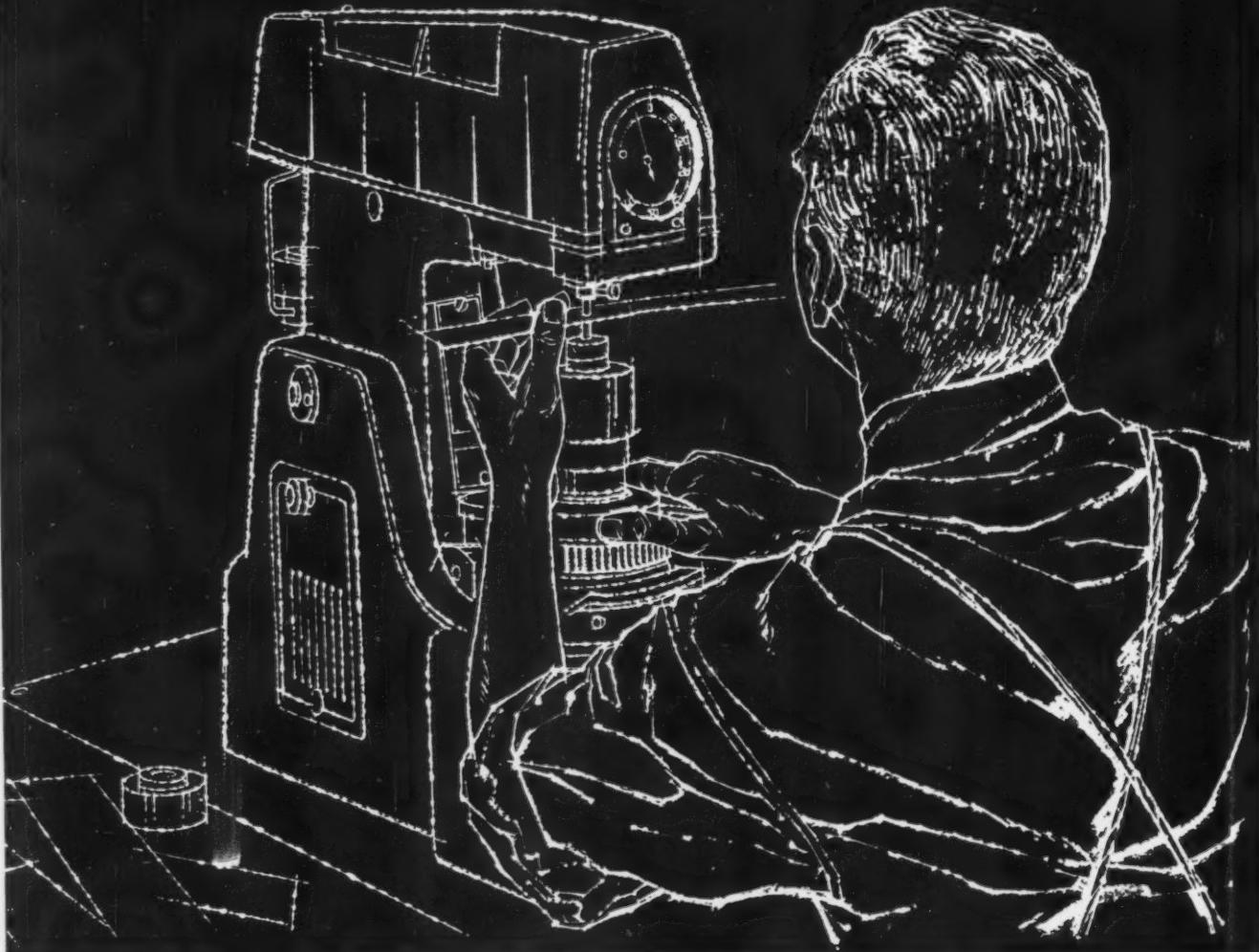
Quest for Flexibility — "Research," he says, "will provide a solution to the main drawbacks which ceramics have—brittleness, poor machineability, and nonductility. A flexible ceramic might result either through a changed crystal structure or in the bonding phase between crystals." Such a material will be available at some future date, he predicts.

Born in Pomeroy, O., May 5, 1907, Mr. Schwartzwalder was graduated from Ohio State Univer-

sity in 1931 with a Master's degree in engineering. He joined AC Div. as a ceramic engineer that year and worked his way up to the director's post by 1955.

Many Interests—Mr. Schwartzwalder lives on a 100-acre farm at Holly, Mich. On the farm he has tried raising everything from dairy cattle to beef and sheep, "just to see how it works out."

His civic and scientific activities are extensive. He has been a key man in the success of local science fairs in Flint and the National Science Fair held there last year. A current project: Improvement of science education in Catholic high schools in the Flint area.



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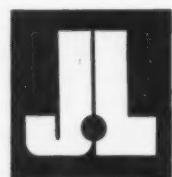
With an organization experienced in specialized strip steel processing, your most rigid specifications can be met consistently.



For your convenience, precision strip facilities are available to you in our plants at Youngstown, Indianapolis, Los Angeles and Kenilworth (N. J.)



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How Business Momentum Builds

Consumers are spending almost all of their higher income. Plus that, they are extending their credit at a rapid rate.

It's part of the chain reaction which keeps business momentum gaining on a broad front.

■ It's hard to put your finger on how a business boom gets under way. But after it starts, it's not hard to see how momentum builds up.

Each set of factors tends to support others until the cycle is completed. Probably the current high rate of business started from inventory rebuilding. But it has now rounded into a broad movement extending from consumers goods to new capital spending.

Money to Spend — Consumer spending, if not the initial cause, has had a big effect on the business buildup. Higher personal income is going into greater consumer expenditures. On top of the higher disposable income, consumers are extending their credit at a rapid rate.

For example: Personal income is now up about 7 pct from a year ago. But savings have not gained. Instead, savings are holding at about the same level. This means that the gains in income are going almost entirely into expenditures.

And More Credit — This added spending of income is being augmented by a very rapid rate of credit extension. In the six months ending in April of this year, the Dept. of Commerce reports: "Consumers supplemented their current income by . . . instalment credit of nearly \$2 billion."

In addition to this greater use of short term credit, mortgage bor-

rowing has also jumped. On top of the greater spending from income sources, credit purchases have made consumer buying a major factor behind the boom.

Business Also Buys — But that's not all. Manufacturers and businesses have tried to build up their inventories. Business inventories were increased by \$2 billion in the first four months of this year.

But because of the rapid rate of production and sales, the sales-inventory ratio for manufacturing and trade is still considered conservative and below that of the same dates in 1958 and 1957.

It takes no economist to take it from there. Production has hit new

highs. Employment has grown until the number of jobless is no longer considered a national problem—although still a hot and painful issue in some localities.

How Long? — As a result, business is now planning to expand its capital spending. Indications now are that business will spend some \$32.5 billion this year for new plants and equipment. This is only about 12 pct below the record of 1957 and well above what the most optimistic had hoped for.

There are some indications of a leveling in the rate of business improvement. But most informed businessmen don't see any turning point in the next 18 months.

Imports Gain, Exports Sag

■ Early this year, foreign trade optimists had hoped for a modest increase in U. S. exports. Instead, shipments of merchandise to foreign countries continue to dwindle as U. S. influence in world markets wanes.

Exports of merchandise in the first quarter of this year indicate an annual rate of about \$15 billion. This compares with \$16.2 billion last year and \$19.4 billion in 1957.

Metalworking Hit — About two-thirds of the decline this year is in non-agricultural products. Among finished manufactures, foreign sales were notably lower in metal manufactures, most machinery categories, and railroad equipment.

At the same time, imports of merchandise continue to gain for the fourth consecutive quarter. Imports of merchandise are still below exports. But services and military expenditures, government grants

and capital outflow added to imports give the U. S. a substantial deficit in foreign trade.

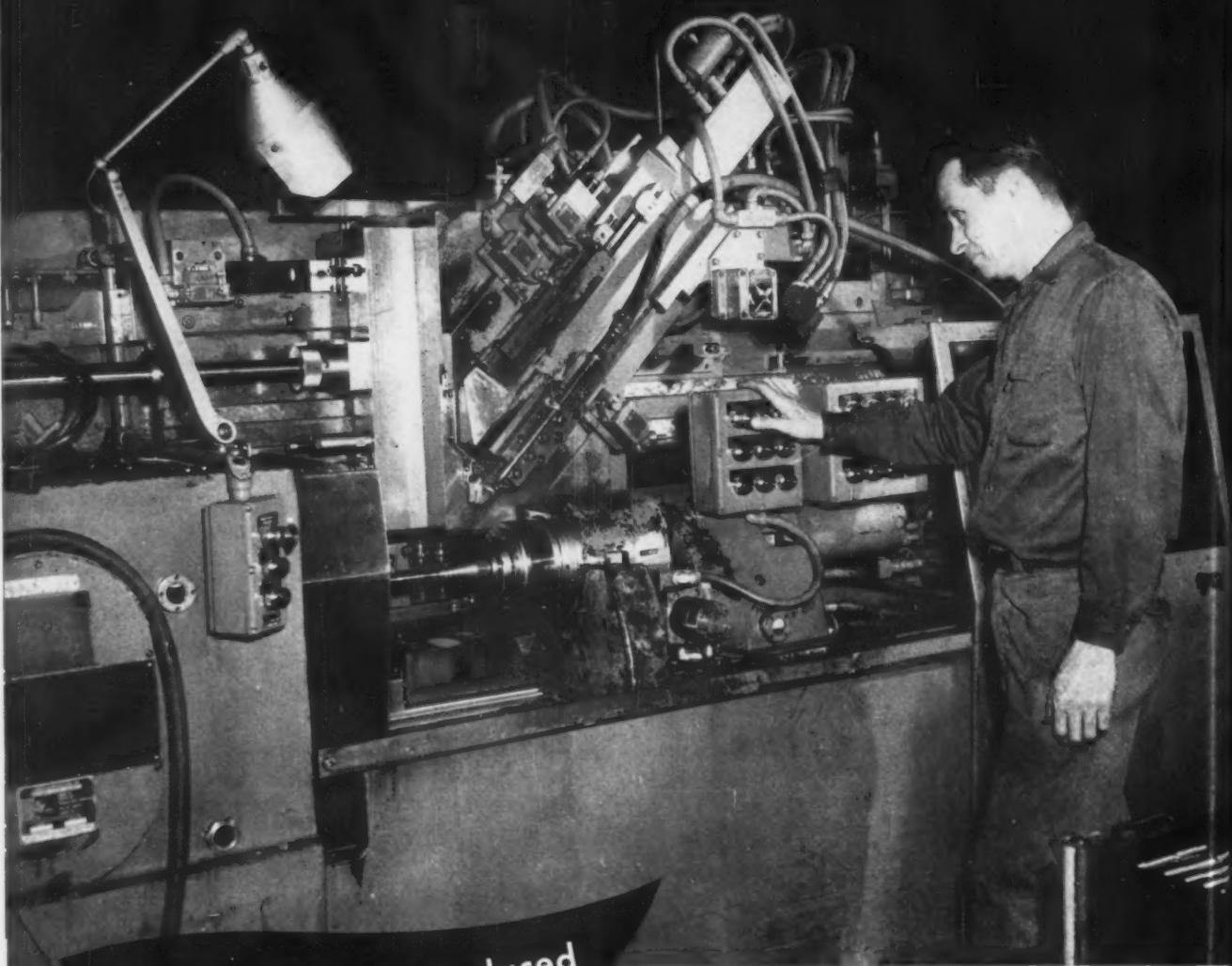
U. S. payments in the first quarter totaled \$6.6 billion compared with receipts of \$5.58 billion.

Investments Abroad Continue to Climb

But at the same time, there is an increased tendency to invest U. S. capital in European subsidiaries.

In the first quarter of this year, Europe received 70 pct of the total U. S. investment abroad. Dept. of Commerce officials confirm that the increased investment in Europe is caused by the trend to establishment of foreign operations in Britain and the new European Common Market.

New investments outside of Europe are smaller, but this is believed to be a temporary setback.



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Further, they are completely satisfied with the Bullard Hydra-Feed and, if ordering another machine for the same job, would consider purchasing another Bullard Hydra-Feed Lathe.

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Tire Wear Touches Off Squabble

Public Blames Tiremakers Who Blame Automakers

Smaller wheels, greater horsepower, and power accessories reduce tire life, say tire makers.

Look for more research into the possible cures for tire deterioration.—By H. R. Neal.

■ Chances are, if you have a late model car, you'll be putting new tires on it sooner than you did on your old car.

Tire manufacturers are concerned over the problem of shortened tire life, but insist they aren't to blame. Engineers attending the recent SAE meeting to discuss ways of eliminating the spare tire were willing to talk off the record on one of the tire manufacturers' biggest headaches—complaints about shortened tire life.

Who's Responsible?—They estimate tire life has been shortened by as much as 15 to 25 pct since the automakers adopted 14 in. wheels on 1957 models.

Tire manufacturers are concerned over the problem of less mileage from their products, but insist they are not to blame. Instead, they point an accusing finger at the automakers.

Weight and horsepower of cars has climbed steadily in the past 10 years, they say. But, at the insistence of stylists, the tires have become smaller. Wheel size has dropped from 16 in. to 15 in. down to the present 14 in. wheels.

Power Options Contribute—Power steering and power breaks are becoming increasingly popular—particularly on larger, more expensive cars where weight and tire wear already are big problems.

Power steering enables anyone to

turn the wheels of a car with little effort while it is standing, with the pavement rubbing tread off the tire like an eraser against sandpaper. Power brakes can stop a car in about one-third less distance, with a resultant increase of friction between the tire and road surface.

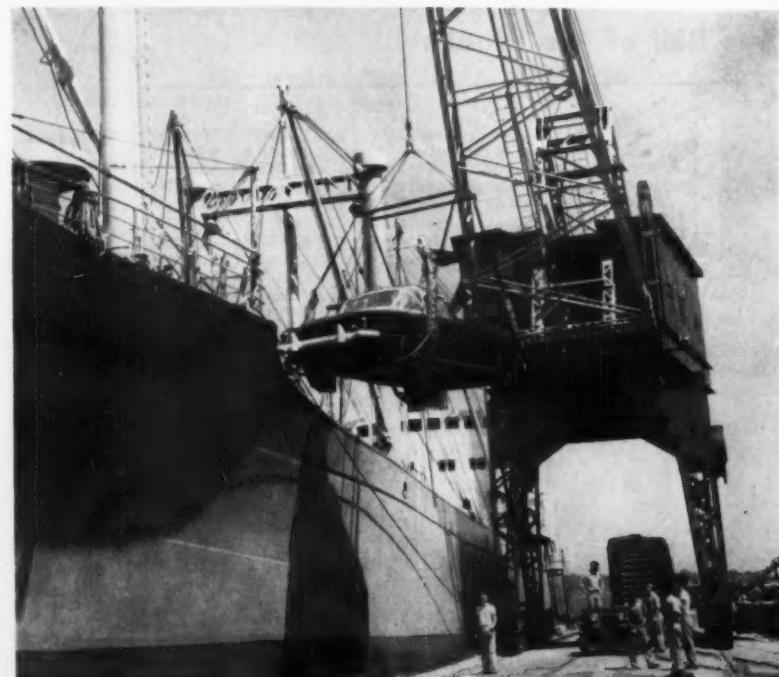
More Turns, Lower Pressure—Tires must support greater weights and greater acceleration and deceleration forces as well as higher sustained speeds. The smaller tires must turn more times to cover the same distance as previously used larger tires. All of these changes

tend to produce heat, a tire's greatest enemy.

The tire engineers also accuse auto engineers of setting recommended inflation pressures low to obtain a softer ride. Many owners manuals found in new cars recommend inflation pressures as low as 22 to 24 pounds. The low pressure increases flexing of tire sidewalls, which in turn generates heat.

Unlikely Alternative—"If they'd raise the seats an inch or two and put a little more padding in them, they could put a few more pounds of air in the tires and add 5000 mi.

New Scene on the Great Lakes



UNLOADING FOREIGN CARS: First full cargo of 156 Mercedes-Benz cars to arrive at a Great Lakes port through the St. Lawrence Seaway is unloaded at Muskegon, Mich. Ship has special cargo decks for autos.

to the expected life," ruefully commented an engineer from one company. "But they have to pay for the padding and we have to make good on the tires."

Occasionally, a tire engineer with one of the automakers can be found who will frankly admit that the tire manufacturers are correct—and they'll admit they keep their tires inflated to about 28 lb pressure. Why? Increased tire life, better gasoline mileage due to reduced friction. And they recommend as much as 30 lb pressure for continuous, high speed driving such as on turnpikes.

A Compromise—Auto men explain the lower inflation pressures are a necessary compromise—between tire life and riding qualities. And there are times when the lower pressures are highly desirable for better traction on snow, ice, or wet roads.

Regardless of who's to blame, tire manufacturers have embarked on a program to put more science and engineering into tire research and eliminate some of the trial and error

methods of the past.

More Answers Needed—In recent years tire companies have invested heavily in research—tire cord materials, tread design, rubber and synthetic compositions, tire profile.

But they also admit that after years of designing and producing tires there are still a lot of basic questions that need more adequate answers. Five leading tire companies have underwritten a "fundamental" research program at the University of Michigan's new Automotive Research Laboratory.

Getting Down to Basics—It is hoped the basic study into vibration and acoustical performance of tires, the mechanism of rolling resistance, skidding—the relative motion of the tire, and road-and-tire strength and flexibility will lead to an understanding of automobile tires and suspension systems.

Sponsoring companies are supplying physical data to the research group from applied research and road tests. Completeness and quality of data will probably show

Automotive Production

WEEK ENDING	CARS	TRUCKS
July 4, 1959	107,110	23,661
June 27, 1959	127,217	27,231
July 5, 1958	35,273	7,742
June 28, 1958	92,277	16,736
TO DATE 1959	3,346,845	670,478
TO DATE 1958	2,268,715	451,810

*Preliminary

Source: Ward's Reports

improvement over past years. In the past year, for example, Goodyear has placed in operation near San Angelo, Tex., a multi-million dollar test facility.

Name Your Road—It consists of a 140 mph high-speed track that is a perfect five-mile circle. Recently, a three-mile gravel road, "designed to cut, dig, and gouge the tread off pneumatic tires," was added. Still in the planning stage is a winding road 20 mi. long that is designed to duplicate conditions on the nation's many two-lane highways.

M-E-L Tries Out Aluminum Roof

Aluminum extrusions, sheets and castings are used for the roof of a Continental now being shown by the M-E-L Advanced Engineering Dept.

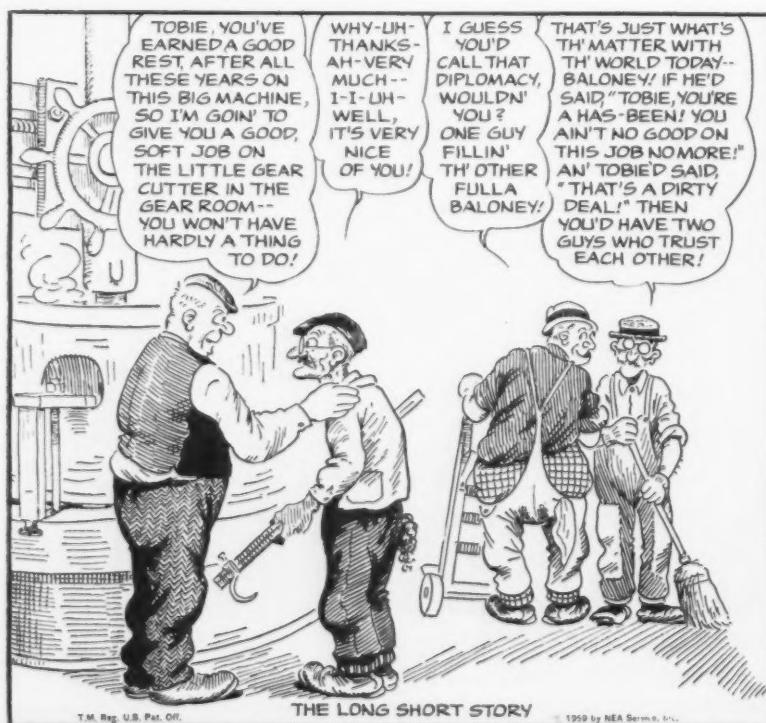
Part of a long range program to explore possible new approaches to automobile production, the roof is completely fabricated and trimmed prior to its installation on the body.

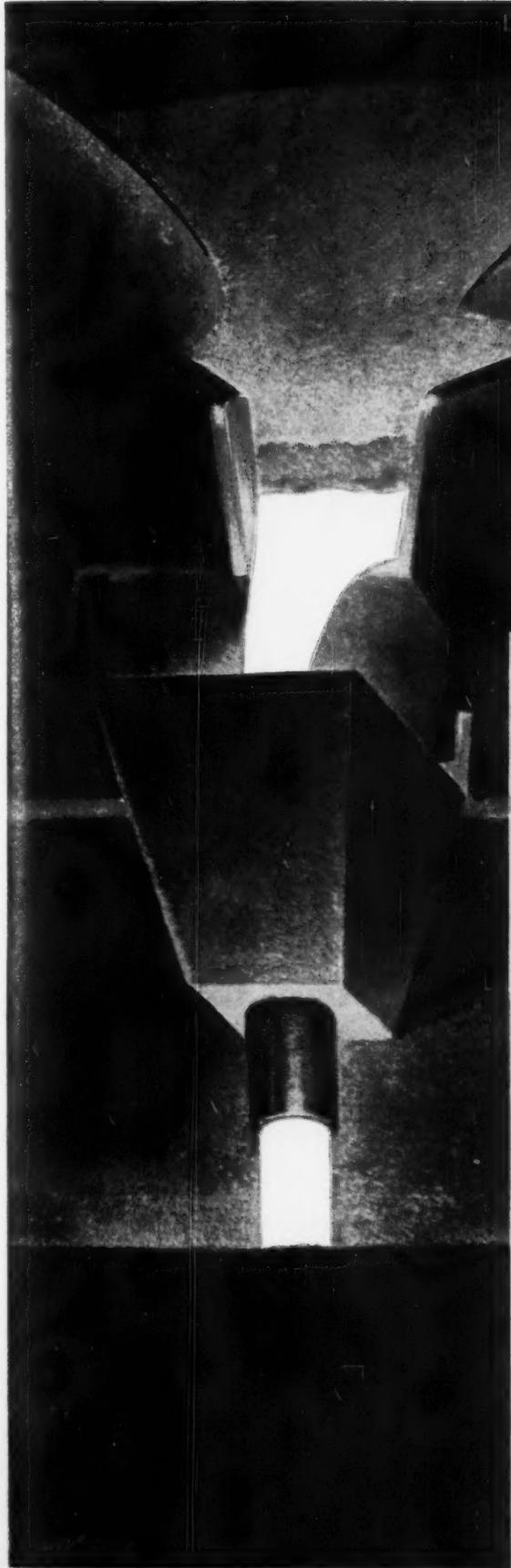
Low-Cost Tooling—Kaiser Aluminum & Chemical Sales, Inc., which provided engineering assistance for the project, says the roof design takes full advantage of the low cost tooling feature of aluminum extrusions.

Extrusions are used for roof rails, windshield header and back window frame. They serve as integral exterior and interior moldings, while meeting structural requirements.

The roof panel is aluminum sheet with a brushed finish. The experimental roof assembly weighs 35 lb less than a production roof made of steel, Kaiser says.

The Bull of the Woods





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"washing machine"
makes CLEAN
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More often than not, titanium-bearing stainless can hike your fabrication costs . . . due to subsurface stringers or banding that cause excessive scrapping of parts. At Eastern, however, these harmful inclusions come out in the "wash."

Eastern's exclusive slag wash melting process produces the *cleanest* titanium-bearing stainless you can buy . . . exceptionally free from non-metallic contaminants . . . and at *no extra cost*. Eastern's new high-capacity slag furnace will meet industry's growing demand for such titanium-bearing steels as 321SW, 19-9DL, A-286, 19-9DX. Which do you need—and how fast?



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Baltimore 3, Maryland, U. S. A.

CINCINNATI FILMATIC No.

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and NEW IDEAS in CENTERLESS GRINDING

... reduce cost of grinding
long **MULTIPLE**
DIAMETER parts

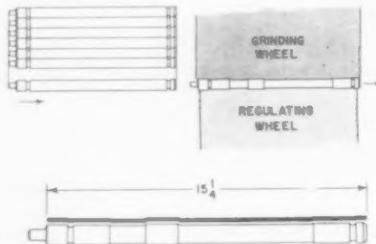
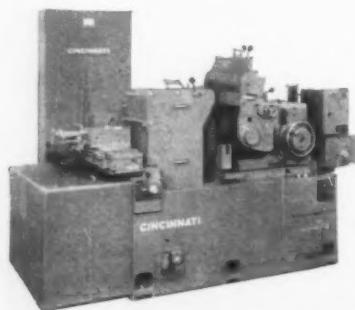
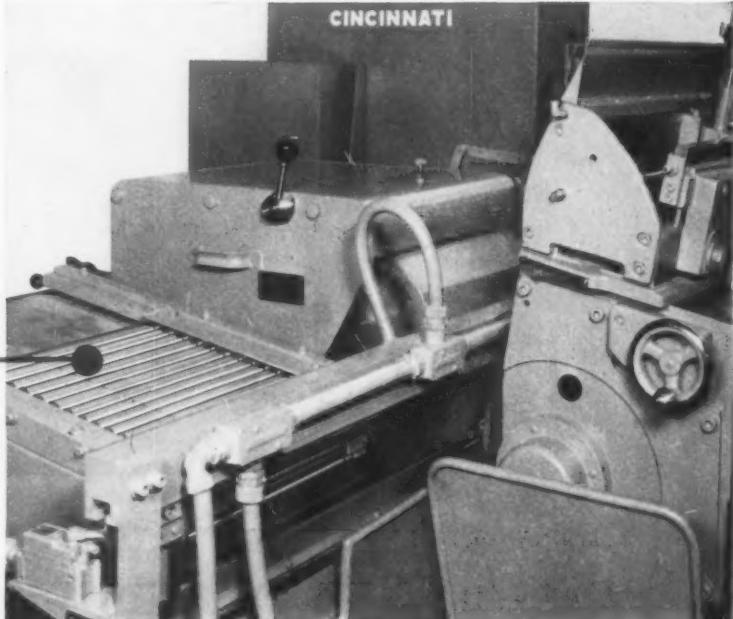


Diagram of operating cycle and drawing of part. Heavy line indicates ground diameters. Stock removal, from solid, ranges from $\frac{1}{64}$ " to $\frac{1}{16}$ ". Production 40 per hour at 80% efficiency.



CINCINNATI FILMATIC No. 3 Centerless Grinding Machine. Catalog No. G-664-2.



OPERATION: Grinding long multiple diameter work from the solid. Automatic magazine feed is coordinated with dual rate automatic infeed cycle and disappearing end stop for hydraulic loading and push-through ejection of work to rear of machine, a CINCINNATI FILMATIC No. 3 Centerless Grinder.

It's time to take a new look at wide-wheel infeed centerless grinding, a low-cost method developed many years ago by Cincinnati Centerless Specialists. The latest equipment illustrated here covers a much wider range of parts. The machine is a CINCINNATI FILMATIC No. 3 Centerless with accessories that incorporate the most modern ideas in centerless grinding:

- Electro-hydraulic automatic infeed unit with a unique variation . . . dual rate feed control and adjustable time delay between feed rates
- Automatic magazine loading fixture, mounted on movable stand
- Disappearing end stop, for hydraulic push-through ejection of work
- Accurate profile power truing for grinding and regulating wheels
- 40 hp drive to the grinding wheel

This type of Cincinnati FILMATIC centerless equipment gives your older wide-wheel grinding machines a high-cost rating that should be corrected now. In addition, many multiple diameter parts, tediously ground one diameter at a time, can be Cincinnati centerless ground at a small fraction of their former cost. Our Centerless Grinding Specialists would like to show you what can be done. Write us for catalog G-664-2, and give us complete details. **Grinding Machine Division, The Cincinnati Milling Machine Co., Cincinnati 9, Ohio.**



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CINCINNATI
GRINDING MACHINE DIVISION

The '61 Budget Will Be Bigger

Administration Has Given Up on "Fat Trimming"

White House fiscal experts say Congress loads down the budget faster than they can cut.

So they'll relax to the tune of about \$3 billion in the next budget.—By G. H. Baker.

■ Here's the inside word on the upcoming 1961 federal budget: Higher, by a sharp \$3 billion-plus. This may well be the largest budget in U. S. history.

The Administration has frankly given up trying to boil the fat (non-defense projects) out of the budget. White House money men say their frustration is due to the tendency of the Democratic Congress to load up budgets with hand out programs.

This attitude is somewhat alarming, for it reflects a lack of any disposition to put up a fight for budget reduction. Even though next year's receipts probably will match—or exceed slightly—revenues, there is little likelihood the savings will be passed on to the taxpayer in the form of lower tax rates or even payments on the national debt.

The reason for the \$3 billion-plus increase in spending starting July 1, 1960, is that we are now about to pay for some of the expensive missile and outer-space projects which have been only in the talking stage for the past several years. These built-in increases, as the Budget Bureau calls them, are just now beginning to show up under "accounts payable."

How Things Look — Here's the budget picture at a glance:

Fiscal 1959 (ended June 30):

Income: \$68.5 billion (\$500 million over estimates).

Outgo: \$80.9 billion (leaving a

deficit of \$12.4 billion, a peacetime high).

Fiscal 1960 (ending June 30, 1960):

Income: \$77.7 billion (\$600 million over estimates, reflecting improved business).

Outgo: \$77.5 billion (\$500 million over estimates because of higher interest rates. Surplus: \$170 million).

Fiscal 1961 (starting July 1, 1960):

Income: No estimates yet.

Outgo: \$80 billion-plus.

McElroy Backs Brass

Big military names are to continue to land influential jobs in industry, despite the current Washington clamour against favoritism.

Defense Secretary McElroy serves notice he'll fight hard for the right of Army, Navy, and Air Force officers to take important procurement jobs following their retirement.

For the Record—Pentagon data, supplied grudgingly to Congress, show that 88 big government contractors have hired more than 721 officers in recent years. Among the firms with large numbers of retired officers are Lockheed Aircraft, General Dynamics, Westinghouse Air Brake, Radio Corporation of America, General Electric, Westinghouse Electric, Boeing Aircraft, General Tire & Rubber, North American Aviation, International Telephone and Telegraph.

Tax Men Aim at Dividend Income

Some People Don't Report—Compulsory withholding of federal taxes on dividends is under study.

Internal Revenue Commissioner Dana Latham says IRS is convinced the only way to stop cheating on dividend income is to have a compulsory withholding law. The law would apply to dividends from stocks, bonds, and government securities.

Latham says the IRS is increasingly disturbed over the volume of income that is "lost" in the United States every year. There's a big discrepancy between total incomes actually earned in the U. S. and total income reported in income tax returns.

The answer obviously is that many taxpayers are cheating. It is

estimated that about \$25 billion in income "disappears" each year and is never reported on tax returns.

The Cheaters—The government will "lose" another \$10 million this year because of a lack of agents, Latham declares. He believes this "loss" will be due to the failure of Congress to appropriate an additional \$1.2 million for the Internal Revenue Service in this fiscal year.

Latham says he suspects much of the leakage is in the middle income brackets. Inspectors already are going over top incomes with a fine-tooth comb. Chiseling today goes on in the middle brackets, he says, and this is the area he wants to investigate with extra lawyers and clerks.

Welcome Site . . .



Within the six-state area served by the Norfolk and Western are huge quantities of the finest metallurgical Bituminous Coal, and multi-million-ton deposits of high-calcium limestone. Fabricating plants can be sure of abundant water from 6 of the nation's principal rivers . . . plus untapped underground reserves. And you can draw upon 1/6 of the nation's electric generating capacity.

Employees in this area have high productivity, low absenteeism. Labor turnover is low, too. And manpower is young, vigorous, with a median age well below the national average.

You can count on Norfolk and Western's Precision Transportation for round-the-clock, round-the-calendar dependability. And you're on a direct route to overseas markets via the modern Port of Norfolk on famed Hampton Roads. Let us help you make a wise and profitable choice in your new plant location. Send us your requirements, in strict confidence, for our detailed analysis. No obligation, naturally.

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L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Division IA-843 (Phone Diamond 4-1451, Ext. 474)
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For quick, competent assistance on shipping problems — talk with the N&W freight traffic Sales and Service representative nearest you . . . in one of 39 key cities across the U. S.

What Causes Los Angeles Smog?

Auto Exhaust Is the Major Villain, Expert Says

Companies working on auto afterburner exhaust control systems hope to help Los Angeles in its smog fight.

Union Oil tries another idea—installing more carburetor control to provide "smogless" cars.—By R. R. Kay.

■ No matter where you live, you're probably breathing contaminated air.

Some 10,000 communities in the nation suffer from air pollution, the U. S. Public Health Service says.

What Price Smog?—So far, Los Angeles County has spent \$17 million trying to lick its smog problem. The county's annual budget is \$4 million. But Los Angeles still has smog.

Smith Griswold, Air Pollution Control Officer, Los Angeles County, told *The IRON AGE* why:

"We'll never get rid of smog until automobile exhaust is controlled," he says.

Public Enemy No. 1—Los Angeles County motorists, truck and bus drivers burn up six million gallons of gasoline per day. The latest figures call attention to motor vehicle exhaust. This, it's claimed, is the major culprit—causing 62 pct of the smog.

Many companies are working on automotive afterburner exhaust control systems. Right now, Mr. Griswold says, the only device which seems to show promise is the one developed jointly by Thompson-Ramo-Wooldridge and Chrysler, Los Angeles.

Problems, Problems—The combine claims that its afterburner will

remove 90 pct of the unburned hydrocarbons. The problem now is how to reduce its cost, size, and complexity.

But Fred L. Hartley, vice president for research, Union Oil Co. of Calif., says we should attack the front of the car instead of the rear.

Evaporation of gasoline puts 20 pct to 30 pct of Los Angeles County's hydrocarbons into the air—about 300 tons per day.

Cars Without Smog—Union Oil is now operating six "smogless

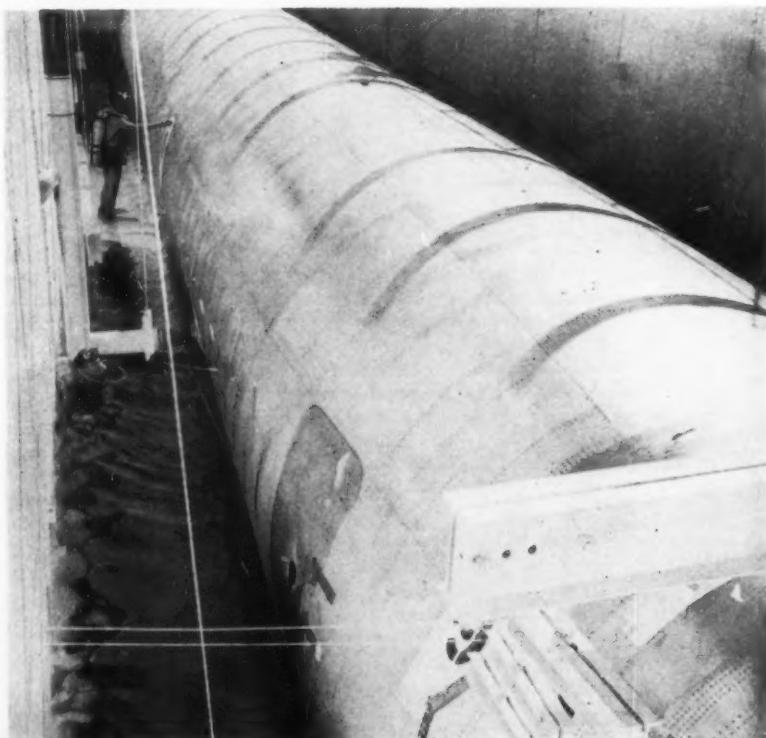
cars." They feature:

All carburetor vents going directly to the atmosphere are closed. Gasoline vapors from the carburetor go back into the manifold, none into the atmosphere.

Gasoline in the carburetor bowl automatically drains back into the gas tank when the car stops. This eliminates "hot soak" which sends a good amount of hydrocarbons into the atmosphere.

The gas tank is insulated and its vent stays closed while the car is in motion.

Waiting for the Waters to Rise

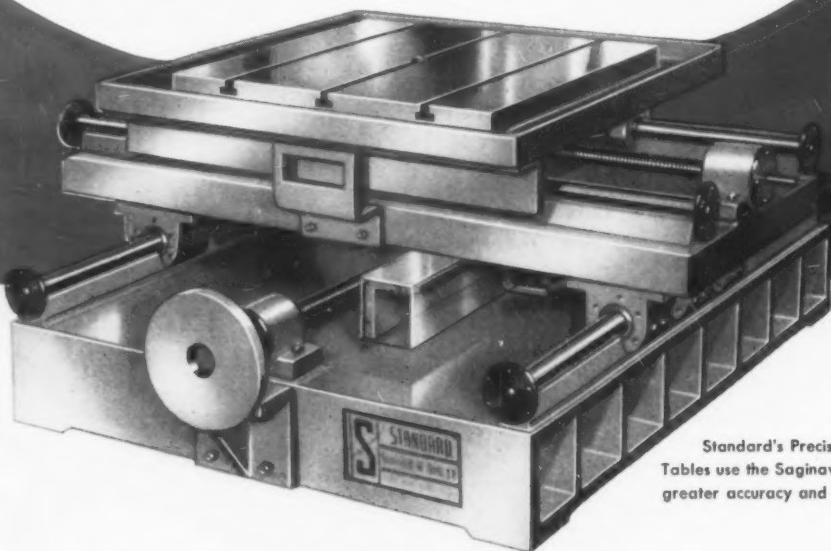


HYDROSTATIC TEST: Skin divers watch test fuselage of Convair 880 jet airliner as water pours into hydrostatic test tank. Flooding signals start of six-month pressure and load cycling program. It will simulate 20 years of flying for the 615-mile-an-hour jetliner.

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Standard's Precision Two-Axis Positioning Tables use the Saginaw Screw for less friction, greater accuracy and superior dependability.

"The accuracy of the Saginaw Ball Bearing Screw plays a vital part in the precision measuring system of our Two-Axis Positioning Tables. These tables take 'orders' from an electronic brain to perform critical positioning during production of printed circuits and aircraft and missile components. Because of Saginaw Screw's standardized design, it saved us time and money in our original engineering, too!" says Mr. W. A. Ferguson, Advertising Manager, Standard Electrical Tool Co., Cincinnati, Ohio.

The Saginaw b/b Screw converts rotary motion into linear motion with over 90% efficiency. It is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

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Saginaw

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bearing **Screw**

WORLD'S MOST EFFICIENT ACTUATION DEVICE

New Bid in Centerless Grinding

Norton Enters Field With 'Triple Threat' Machine

The new unit has three major design advances, company officials claim.

They are a new bearing design, mobile wheel head, easy loading—By E. J. Egan, Jr.

■ Here's news for anyone who uses centerless grinders. The Norton Co., a leading maker of abrasive products and a longtime (since 1900) builder of other grinding equipment, has just unveiled its first entry in the centerless field.

The new unit embodies three major design advancements, company officials say. Singly and in combination, these innovations aim to give the user triple benefits in the form of speed, accuracy, and economy.

Prevents Deflection — The star design feature gets top billing right in the name of the new machine: "Norton No. 2 Straddle-Bearing Centerless Grinder." Straddle Bearings on the spindles of the grinding wheel and regulating wheel support the wheels on both sides.

One purpose of the Straddle Bearing design is to prevent deflection which may occur if an extra wide wheel is mounted on the end of an unsupported spindle. It also counteracts any tendency for the spindle to deflect under heavy grinding pressure or wheel-turning pressure.

Click-Count Wheel Feed — With this extra rigidity, Norton engineers say, the new grinder will provide excellent control of workpiece size and straightness at high production rates.

Another key design feature is the mobile grinding wheel head which

moves on hand-scraped ways. Infeed of the wheel for plunge grinding or accurate sizing on through-fed work is controlled by an extremely accurate rotating feed screw. A handwheel permits "click-count" adjustments of wheel feed in steps of 50 millionths of an inch.

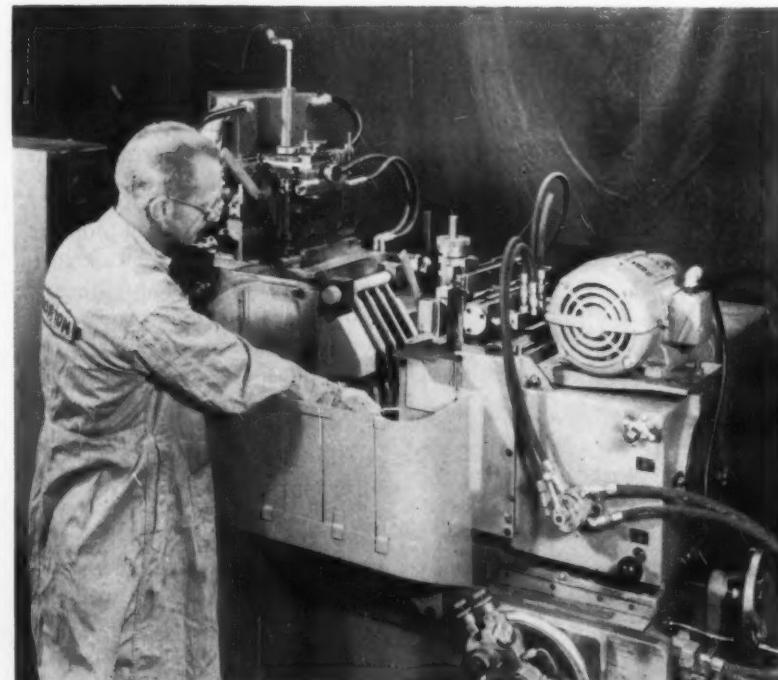
No Need to Reset — The regulating wheel head adjusts longitudinally to accommodate workpieces of varying diameter. This adjustment also compensates for normal truing wear on the wheel. A conveniently located knob provides infinitely variable regulating wheel speed between 8 and 66 rpm.

As a third major feature, the new

machine simplifies work-loading alignment, especially where a user plans to link two or more machines with conveyors in a single production line. Because the grinding wheel feeds to the work, the line of work feed stays the same for both the machine and the conveyor equipment. The work rest stays put; there is no need to reset it constantly.

Easy to True — To true the grinding wheel, the operator feeds the truing diamond manually and then turns a lever to actuate the hydraulically-powered truing stroke. Truing a 90° step in the wheel doesn't require special equipment.

Features Ideas From Users



THOROUGH RESEARCH: Norton designers quizzed many users of centerless grinders for ideas to incorporate in the design of this new machine.

INDUSTRIAL BRIEFS

Get It Straight—Effective July 1, the Steel Div. of Bethlehem Pacific Coast Steel Corp. will become Bethlehem Steel Co., Pacific Coast Div. The Shipbuilding & Ship Repair Div. of Bethlehem Pacific Coast Steel Corp. will become Bethlehem Steel Co., Shipbuilding Div., Pacific Coast District.

Alan Wood in Boston—Alan Wood Steel Co. opened a new district sales office in Boston. The office is located at 824 Boylston St., Chestnut Hill, a suburb of Boston. Edward H. Lloyd, Jr., is district manager.

New Crerar Library—The John Crerar Library, one of the world's largest collections of technical, scientific, and medical literature, will move to the Technology Center campus of Illinois Institute of Technology. A new public library building is to be built there.

Industrial Pickling—Chicago Bridge & Iron Co. plans to add a 100 x 500 ft building and a pickling facility to its plant near Houston, Tex. The new building will house the plant's fabricating and erecting equipment. The pickling facility will be used to remove excess mill scale from steel plates and shapes.



"He may demand a lot of respect, but he certainly is generous to his employees."

Big Press—Aluminum Co. of America plans to install a 5,200 ton capacity extrusion press at its Vernon, Calif. Works. Installation is set for July and the new facility will be in production in early 1960. Included in the \$5 million expansion are a new building to house the press, and a 750,000 lb capacity stretcher, installed last year.

Steam Power Bowing Out—Crucible Steel Co. of America will spend \$4.5 million during the next six months for the electrification of the Blooming Mill at its Midland, Pa. Works. Installation of two 5,000 hp electric motors will replace the existing steam engines for driving the Blooming Mill rolls.

Hot-Coil Contract—Production Machinery Corp. Mentor, O., has a contract for hot rolled coil preparation facilities for a new plant expansion by Universal-Cyclops Steel Corp. at Coshocton, O. The processing lines include a coil built-up line, an annealing line, and a continuous shot blast and pickle line.

Big Bump—The U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., have developed a full scale rail car hump track, enabling packaging engineers to obtain a complete record of the effects on shipments of bumping and other conditions that mark the switching of freight cars.

High Temperature Resin—A silane modified phenol-formaldehyde resin, which retains its strength after exposure to temperatures of 600 degrees F. for hundreds of hours, has been developed by Monsanto Chemical Co.'s Plastics Div. The new material was designed for use with fibrous glass and asbestos reinforcements to make radomes for supersonic aircraft.

Merger With Ford—Aeronutronic Systems, Inc. will merge with Ford Motor Co. and its operations will be carried on by Aeronutronic, a division of the Company. The merger has been approved by the boards of directors of both Ford and Aeronutronic.

Stock Exchange—Rockwell-Standard Corp., Coraopolis, Pa., acquired the Air-Maze Corp., Cleveland, manufacturers of industrial liquid and gas filters. The acquisition became effective June 30, by an exchange of stock wherein R-S gave in excess of 100,000 shares of its unissued Common Stock for 100 pct of the shares of Air-Maze previously issued and outstanding.

Mallory Acquisition—P. R. Mallory & Co., Inc., Indianapolis, has acquired the Western Alloy Products Co., Grand Junction, Colo., which will operate as a wholly-owned subsidiary. WAPCO will sell tungsten carbide parts manufactured by Indar Corp., a Mallory subsidiary, to the mining and oil well equipment industry.

Potline Reactivated—Kaiser Aluminum & Chemical Corp. is putting 22,000 additional tons of primary aluminum capacity in operation by reactivating another potline at its Mead, Washington, reduction plant. This is the fourth increase in primary aluminum production that the corporation has made within two months.

Hagan Gets Contract—Armco Steel Corp. has awarded Hagan Chemicals & Controls Inc., a contract for blast furnace oxygen enrichment controls at its Middletown, O., steel plant. Contract includes panels and metering equipment.

Ceco Gets Machinery—Birdsboro Steel Foundry & Machine Co. is completing delivery of more than \$2 million worth of steel mill equipment for Ceco Steel Products Corp. The machinery is being installed in a new merchant bar mill at Lemont, Ill.

Engineering Show—The Production Engineering Show is scheduled for the Navy Pier, Chicago, Sept. 6-16, 1960. The Machine Tool Exposition, sponsored by the National Machine Tool Builders Assn., will be held at the International Amphitheatre on the same dates.



**THE ONES THAT WILL LAST (and last, and last!)?
THOSE MADE FROM CONTINUOUS PROCESS
ZINC-COATED STEEL SHEETS**

And just why will they last and last?

The people of the Galvanized Container Industry, always alert to make improvements to keep their products the best, can give you a multitude of reasons why. Chief among them: the continuous process insures a uniformly applied, corrosion-resistant zinc-coating. In fact, the zinc and steel are integrated to form a tight bond for every square inch, a durable coating which stands up to any rigorous stress of the fabrication process.

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In continuous process zinc-coated steel, there is a stand-out—Weirkote. On your production lines and in your products, Weirkote will work for you all of the time. For detailed information on the many advantages of Weirkote zinc-coated steel, write today for a brochure. Weirton Steel Company, Dept. A-19, Weirton, West Virginia.

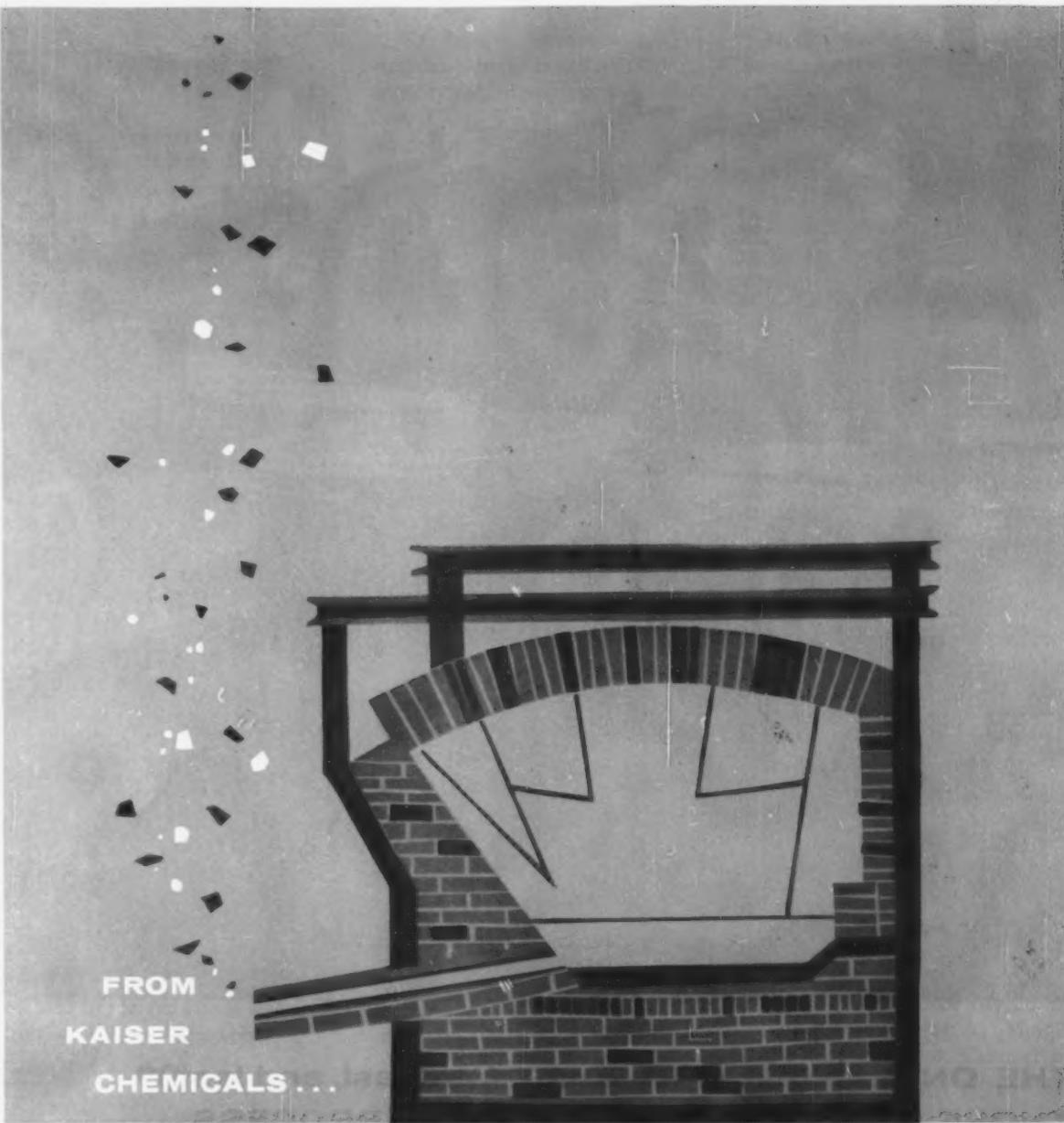


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ALL

basic brick compositions
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required by the steel industry.

Each of these Kaiser Basic Refractories is designed for peak performance in a specific steel industry application. And all are backed by more than 17 years of continuing research and development.

BRICK:

1. Kaiser Periclase "D". Burned. For electric furnace "hot spots," O.H. slag line.
2. Kaiser Periclase "DS". Burned. High MgO

(95%-+). For basic open hearth and electric furnace sub-hearths.

3. Kaiser Periclase. Burned. Low iron, chrome free. For sub-hearths.

4. Kaiser Periclase Chrome. Unburned-Burned. High spall and slag resistance. For open hearth end walls, front walls and roofs, electric furnace side walls.

5. Kaiser Chrome Periclase. Unburned-Burned. Highest spall resistance. For all exposed O.H. areas.

6. Kaiser Chrome "DC". Burned. High chromite, Periclase bonded. For soaking pits, O.H. front piers at slag line.

7. Kaiser Chrome. Burned. High chromite corrected, neutral. For reheat & forge hearths and soaking pits.

MIXES, MORTARS & GRAINS:

8. Permanente 165 Ramming Mix. High purity, 95-96% MgO, high density, low shrinkage. For new bottoms or slopes.

9. Permanente 84 Ramming Mix. High magnesia. For new bottoms, banks; or hot repairs.

10. Gunning Grains. K/R 95. For hot repairs above slag line. O.H. and electric furnaces.

11. Gunning Grains. K/R 165. For hot repairs below slag line. O.H. and electric furnaces, and hot tapholes.

12. Bonding Mortars. Several types. High purity MgO; Dry Chrome. For all types of bonding.

13. Furnace Grains. A variety of Periclase mixtures, Deadburned Magnesite, Deadburned Dolomite, Chrome Ore.

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OAKLAND 12, CALIF. 192 Broadway

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REFRACTORIES

Ask to see the 30-minute color movie, "Progress in Modern Basic Refractories." Arrangements will be made by your Kaiser Refractories Sales Representative or Regional Office.

Fairbanks, Morse & Co.—**R. W. Kerr**, elected president; **F. H. Canker**, elected vice president, administration; **W. S. Schwab**, and **D. W. Holloman**, elected asst. secretaries.

Edgcomb Steel of New England, Inc.—**A. H. Damon**, elected president and general manager, and **E. H. Cotton**, treasurer.

Westinghouse Air Brake Co.—**L. B. Walkley**, named vice president, operations; **E. D. Greiner**, elected vice president, finance; **J. S. Smith**, elected treasurer; **W. L. Richardson**, named vice president-asst. to the president; **J. D. Perley**, appointed asst. vice president, personnel; **J. A. Carlson**, elected secretary.

American Steel Foundries—**J. F. Partridge**, elected secretary and counsel; **W. L. Schlegel, Jr.**, appointed asst. secretary and chief patent attorney, and **M. C. Holmes**, appointed asst. secretary.

S. P. Kinney Engineers, Inc.—**J. D. Morrow**, appointed vice president and treasurer; **H. B. Carr**, appointed vice president, engineering.

Allis-Chalmers Mfg. Co.—**W. C. Krecklow** and **G. J. Slies**, promoted to general superintendents, Manufacturing Dept. of the Industries Group.

Pittsburgh & Conneaut Dock Co.—**J. W. Ahlberg**, appointed superintendent, maintenance and repair.



W. C. Ridge, appointed executive vice president, John A. Roebling's Sons Corp.



W. B. Leach, becomes a vice president, Kaiser Aluminum & Chemical Sales, Inc.

SKF Industries, Inc.—**G. E. O'Connor**, appointed manager, market analysis.

Hewitt-Robins, Inc., Industrial Products Div.—**M. R. Wilkens**, appointed sales planning manager.

ACF Industries, Inc., W-K-M Div.—**C. R. Spencer**, appointed manager, special projects for W-K-M.

Bethlehem Steel Co.—**F. J. Broglie**, appointed technical adviser, openhearth operations.



E. S. Twining, Jr., appointed vice president, marketing, Air Reduction Sales Co.

MEN IN METALWORKING



C. A. Smith, elected a vice president, Kaiser Aluminum & Chemical Corp.

The Youngstown Sheet & Tube Co.—**F. C. Langenkamp**, appointed asst. superintendent, continuous butt weld tube mills, Indiana Harbor works.

Universal Atlas Cement Div., U. S. Steel Corp.—**C. A. Headlee**, appointed comptroller.

Raybestos-Manhattan, Inc.—**R. B. Parks**, appointed asst. sales manager, industrial rubber products and packings; **S. J. Synott**, appointed

(Continued on P. 82)



J. W. Todd, Jr., appointed asst. vice president-sales-distribution, U. S. Steel Corp.

(Continued from P. 81)

general marketing manager, industrial rubber products.



J. C. Olson, elected vice president, manufacturing, The Bullard Co., Bridgeport, Conn.

Republic Steel Corp.—R. A. Kraus, appointed superintendent, construction, Warren, O.; J. H. Thompson, appointed superintendent, bar mill, Gadsden, Ala., plant.

Consolidated Electrodynamics Corp.—F. A. Smith, appointed manager, Atlanta, Ga., district sales office.

The Cleveland Cap Screw Co.—D. G. Kelton, appointed sales manager, eastern states territory.

Wales-Strippit, Inc.—N. F. Weyland, appointed general sales manager; John Rinaldo, named Midwest Division manager.

Cutler-Hammer Inc., Merchandising and Sales Promotion Div.—G. A. Rauch, named manager.

Thor Power Tool Co.—R. B. Shulters, appointed director, engineering, Aurora (Ill.) Works.

Alco Products, Inc.—A. A. Batts, Jr., named director, advertising, public relations and market research.

Nichols Wire & Aluminum Co.—G. J. Brenneman, named marketing manager; J. D. Case, manager, sales, Mill Div.; C. L. Johnston, general manager, Warehouse Div.

Pittsburgh Bridge & Iron Works, Inc.—C. E. Russell, appointed plant manager.



J. S. Davey, elected vice president, sales, Russell, Burdsall & Ward Bolt & Nut Co.

General Motors, Overseas Operations Div.—E. S. Hoglund, appointed general manager.

Union Carbide Nuclear Co., Div. of Union Carbide Corp.—J. C. Brantley, appointed asst. director, research.

The R. C. Mahon Co., Structural Steel Manufacturing Div.—R. J. McIntosh, named plant manager of the Division.



W. J. Wenger, named vice president, roll sales, Blaw-Knox Co., Pittsburgh.

Jones & Laughlin Steel Corp., Stainless and Strip Div.—J. H. Das (Continued on P. 85)



LOW-COST SCRAP HANDLING ERIE ORANGE PEEL GRAPPLERS

Strong closing action. Picks up anything it can get its blades around. All-welded high-carbon steel construction means low-cost performance for a long time.

OTHER IMPORTANT FEATURES:

- Multi-Sheave Reaving
- High Wear-Resistant Alloy Sheaves
- Recessed Alemite Grease Fittings
- 3 and 4-Blade Models
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The exciting Ford Thunderbird is an example. Quality Olin Aluminum is going into the manufacture of most of the fine new cars. Bright, light aluminum resists corrosion, won't rust. No other metal gives car owners such lasting satisfaction. Olin Aluminum, in its first year as a major producer, is already a basic source of supply for the great names in the automotive industry.



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(Continued from P. 82)

dorf, appointed a service metallurgist.



J. D. Kirkwood, named general manager, sales, Truscon Div., Republic Steel Corp.

E. F. Houghton & Co.—**R. C. Zurbrigg**, appointed lubrication engineer.



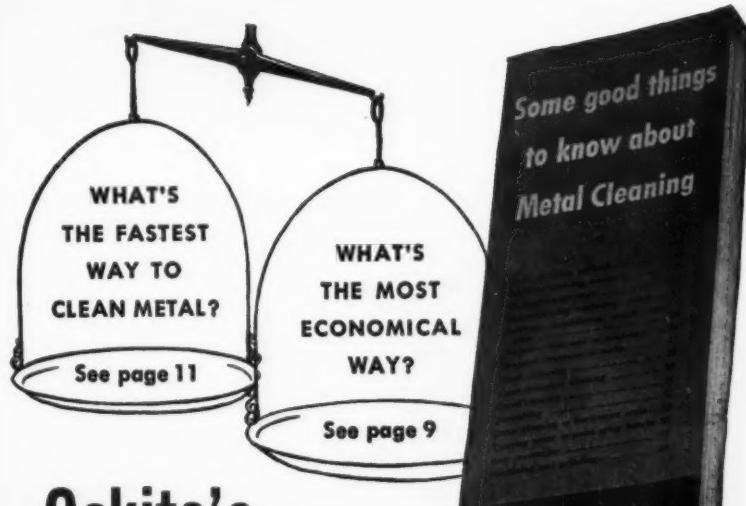
W. G. Blessing, named director, purchases, Blaw-Knox Co., Pittsburgh.

OBITUARIES

J. F. Croasdale, 54, vice president, Revere Copper & Brass Inc., and executive head, Baltimore, Md., Division.

A. W. Moody, 64, president and chairman of the board, Edgcomb Steel of New England.

R. W. Weeks, vice president, Compressed Steel Shafting Co.



Oakite's FREE Booklet on Metal Cleaning

answers many questions that mean better production, more profit for you. Just look at the table of contents:

Tank cleaning methods.	Machine cleaning methods
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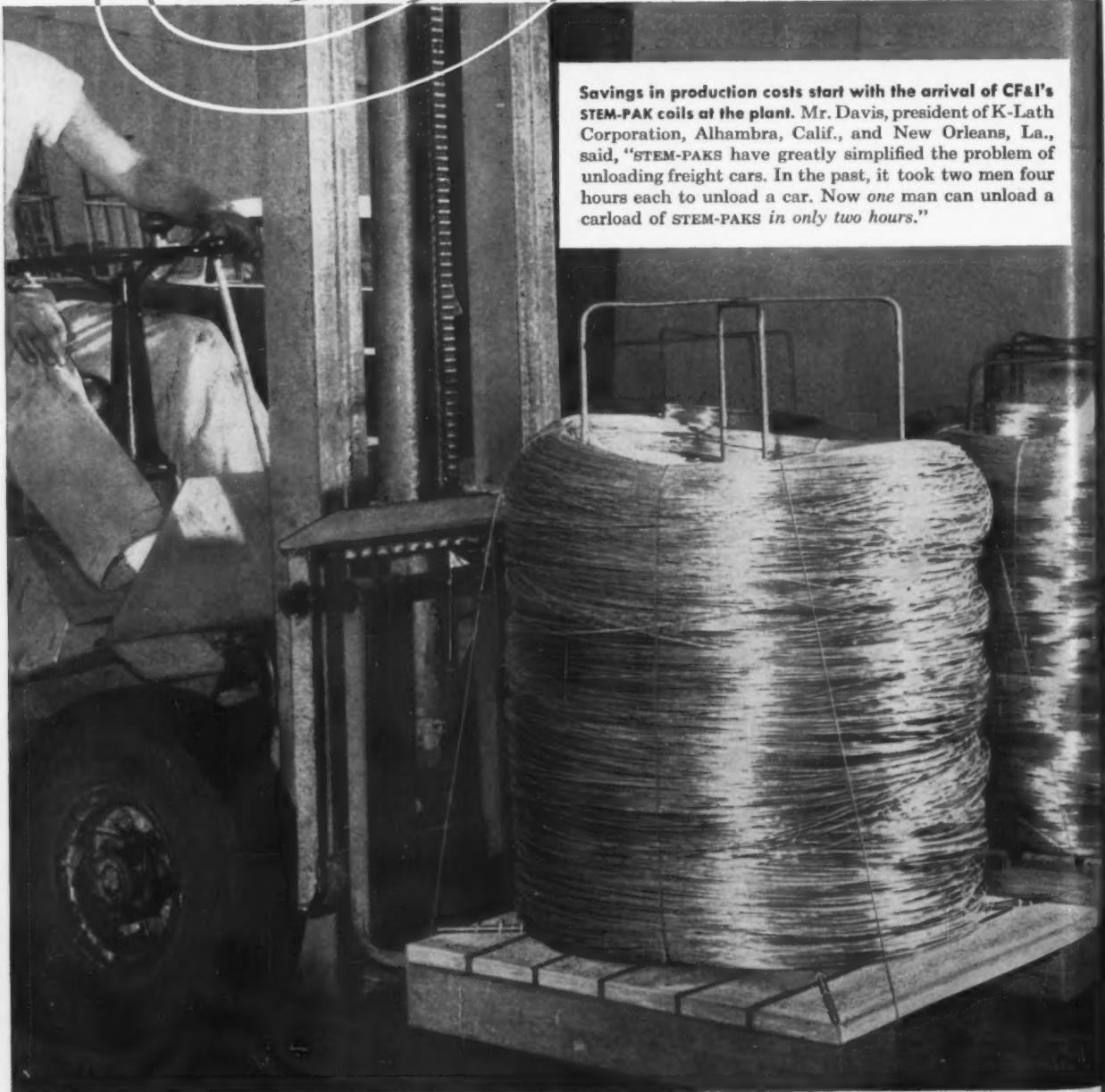
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COMPANY _____

ADDRESS _____

CF&I Wire

PACKAGED for
YOUR PRODUCTION



Savings in production costs start with the arrival of CF&I's STEM-PAK coils at the plant. Mr. Davis, president of K-Lath Corporation, Alhambra, Calif., and New Orleans, La., said, "STEM-PAKS have greatly simplified the problem of unloading freight cars. In the past, it took two men four hours each to unload a car. Now one man can unload a carload of STEM-PAKS in only two hours."

helps K-LATH increase production 50%



Continuous production achieved by butt-welding the start of a new STEM-PAK to the end of a nearly expended PAK. This change-over takes less than 5 minutes. No machines are stopped. "STEM-PAK's coils, which hold up to a half-ton of wire, permit us to run each machine as much as 1½ hours longer per day than when we used conventional coils," pointed out Mr. Davis.



K-Lath, an unusual type of lath made of kraft paper reinforced with CF&I Steel Wire, is finding wide acceptance among plastering contractors. "CF&I's clean, galvanized wire helps us to produce a brighter, better-looking product that appeals to contractors," explained Mr. Davis. "CF&I's excellent quality control also assists us in maintaining our own high standards of quality."

problem: "Our production machines are designed for the interlacing of kraft paper with galvanized wire," said Mr. Davis. "As we use about 370 miles of wire daily, our biggest problem was the time lost when we replaced the wire coils feeding our machines. The entire production line came to a halt each time we changed one of the coils."

solution: "Our request for technical assistance from CF&I was answered by a team of engineers," continued Mr. Davis. "These men developed the special STEM-PAKS which have aided us in achieving a continuous operation. Up to 75% of our production downtime — before we began using CF&I products — was caused by using too many small coils. STEM-PAKS hold 800- to 1,000-pounds of continuous, quality galvanized steel wire. These larger packages keep each machine running as much as 1½

hours longer per day. There is a minimum of tangled wire because STEM-PAKS allow free unwinding, without snarling. We have used CF&I STEM-PAKS to increase our production 50%."

Before you order wire, consider your own production problems. Then choose a CF&I wire package that can give you one or more of the following benefits:

- reduced downtime through extra-long lengths of wire
- simplified inventory control
- fast, economical unloading and in-plant handling
- assured cleanliness of the wire

Why not contact our nearest sales office today? Our technicians will be glad to visit you and discuss your packaging requirements.

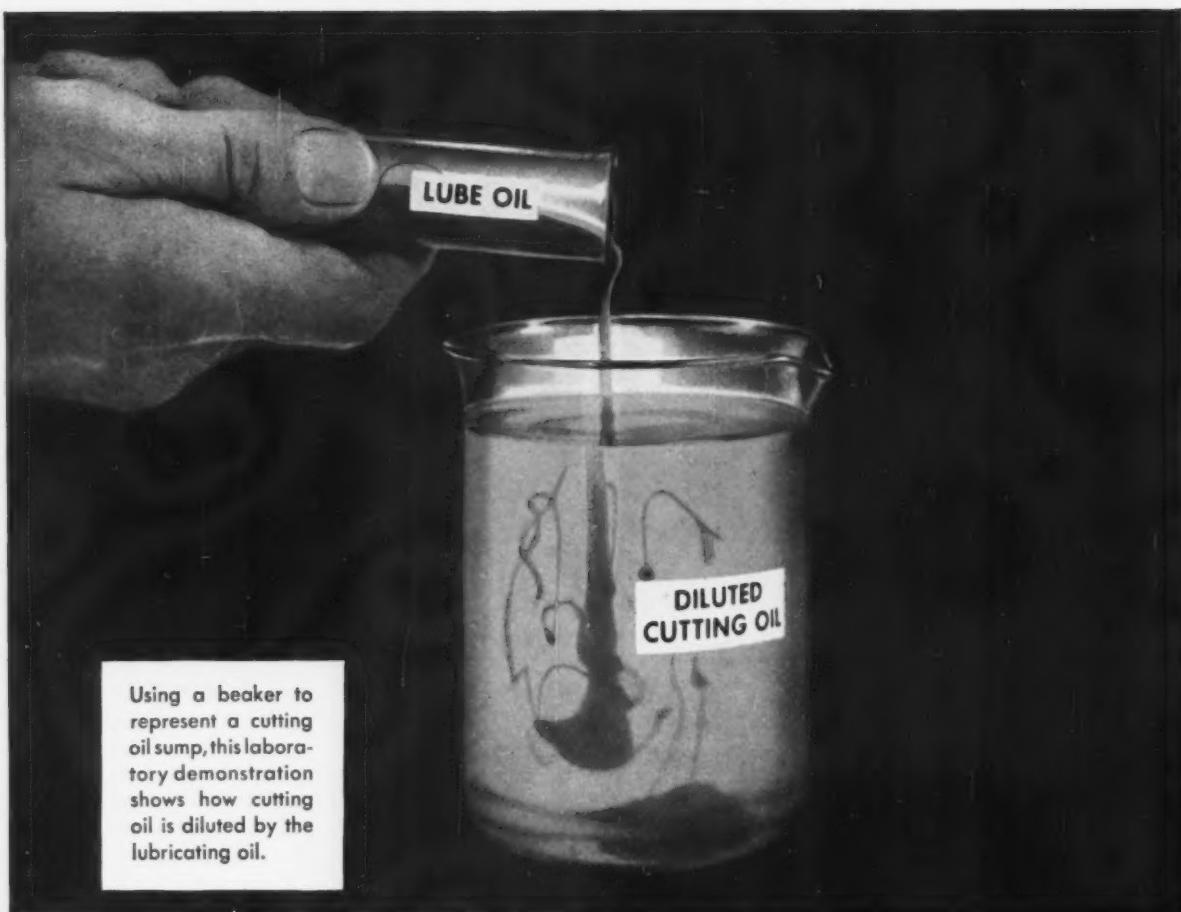
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Francisco • San Leandro • Seattle • Spokane • WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston
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Using a beaker to represent a cutting oil sump, this laboratory demonstration shows how cutting oil is diluted by the lubricating oil.

Diluted cutting oil can cut output 33%

No matter how careful your lubricating techniques, you still can't stop lube oil from leaking into the cutting oil sump on 70% of automatic screw machines. As cutting oil is diluted, it loses strength—ingredients that make it efficient become less and less effective. The natural consequence is shortened tool life, more downtime and a higher percentage of rejects.

Texaco Cleartex can end this problem forever. All you have to do is use Cleartex for both cutting and lubrication...and watch your production rise. The exceptional chemical stability and load-carrying ability of the Cleartex series make them equally suitable for use as cutting oils, lubricants and hydraulic fluids. (70% of all automatic screw machines can benefit from the "Cleartex Cure!").

TAKE THE CLEARTEX CURE SOON!

Write today for your copy of Texaco's new booklet—"Cleartex in Automatic Screw Machines." This new illustrated guide will fill you in on the details, show you

where you may be losing profits and how to avoid it... Or contact your local Texaco Lubrication Engineer soon for an authoritative survey of your automatics. Just call the nearest of more than 2,300 Texaco Distributing Plants, or write to Texaco Inc., 135 East 42nd Street, New York 17, New York. Dept. IA-FM-12.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

Tubing Gets 100-Pct Inspection As Eddy Currents Spot Flaws

After one million inspection feet without trace of error, a non-destructive test takes its place on the production line.

It's an eddy current method that meets the strictest inspection requirements.

Users of pressure tubing have always hoped to get a firm guarantee that a given piece of tubing contains no harmful flaws or imperfections. It has led to the search for a non-destructive method to inspect each and every length.

After extensive testing, Damascus

Tube Co., Greenville, Pa., has found a practical method. Called Damascopic, it's an eddy current test that accurately reveals location and size of any irregularity.

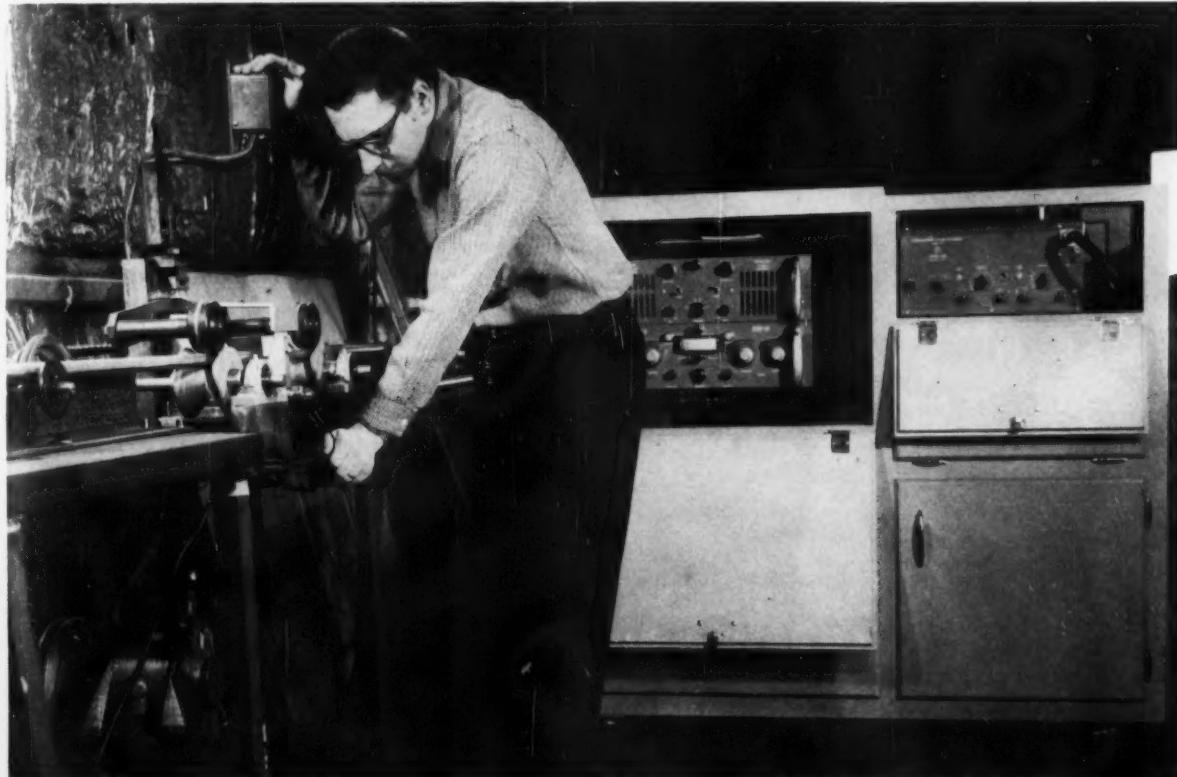
To Satisfy User—The method assures the customer that every length of pressure tubing delivered will meet his specifications. Up to this time no test or combination of tests could make this kind of guarantee.

Hydrostatic testing, for example, required by ASTM and many other specifications, has many points in its favor. However the only conclusion that a tube user can draw is that for the period of testing the

specimen tube did not burst or leak at the required pressure.

Pits or other flaws could be present. Occasionally, tubing with defects approaching 90 pct of wall thickness has been known to pass the hydrostatic test. In such instances, hydrostatic testing accelerates the time-to-failure rate because the defective area is further weakened by the pressure applied.

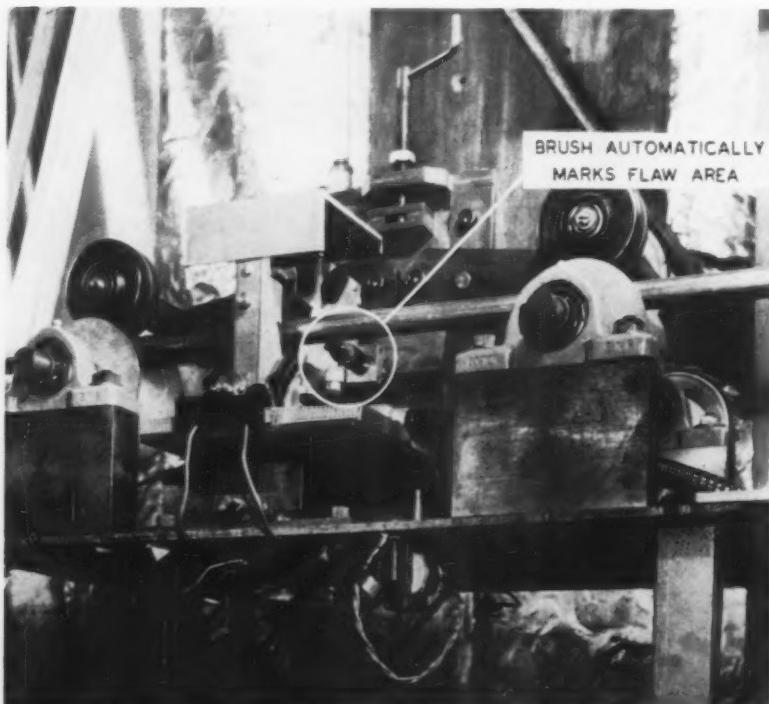
A Search for Method—Other tests, such as visual inspection, dye penetrant, magnetic particle, ultrasonic, boroscopic, and radiographic testing, provide additional information, but each by itself falls short of



PRODUCTION TESTING: Once inspector starts tube through tester, setup automatically reveals any defects.



FOR THE RECORD: Graph recorder indicates tube quality and the size, location and the nature of any imperfections for permanent record.



MARKS WITH DYE: Whenever eddy currents detect a flaw, the brush automatically marks the location with red dye on outside surface of tube.

providing the inspection tubing users require.

Convinced that eddy current testing used in other fields could be adapted to tubular products, Damascus tried several types of equipment. The unit found most suitable was the Radac multiple frequency electro-magnetic equipment, manufactured by Metrol, Inc., Pasadena, Calif.

Using modulation analysis and other refinements, the setup separates responses due to flaws from other back-ground noises caused by non-harmful variations in the tube.

Worked from Start—During testing the setup proved 100-pct reliable. Tubes with known flaws were tested and re-tested to be sure that the results could be duplicated.

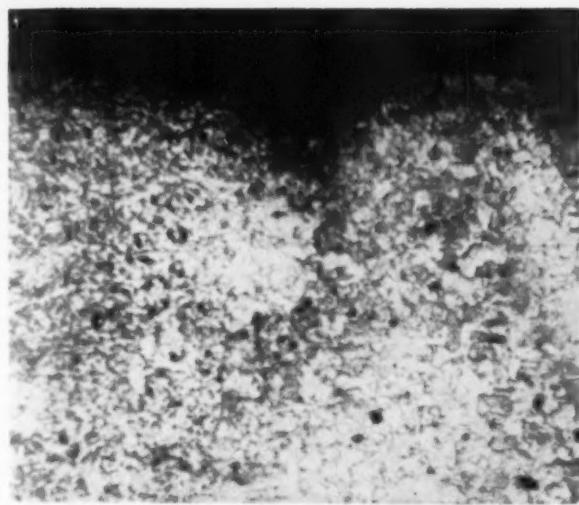
Where a flaw in apparently sound tubing occurred, the tube was sectioned and examined. No tube has ever been passed by the eddy current method in which a flaw was later revealed.

Since the eddy current inspection is non-destructive, buyers have the assurance that every piece is tested and will fulfill their requirements. The continuous inspection setup consistently reveals surface and subsurface cracks, seams, splits, holes, and inclusions that do not turn up in other methods of detection.

Defect or Harmless?—Added to detection capabilities, the setup provides certain data on the depth and length of flaw. It distinguishes between harmless surface irregularities and those defects which are rejectable. The setup provides alloy selection, cutting chance of mixing shipments.

The eddy current method performs complete scanning of each tube. The entire periphery of the tube is examined inside and out, through the wall, and for full tube length.

Since the Damascos test with Radac equipment detects electronically, results are independent of the skill of the inspector. Also, being battery powered, the Radac unit



HOW NOTCH APPEARS: Defect on inside diameter measures 0.0035 in. deep by 0.007 in. wide by $\frac{1}{2}$ in.

is independent of variations caused by current surges.

Calibrate to Order—For regular orders requiring adherence to ASTM specifications, the test unit is calibrated to reveal any irregularity greater than those permitted. Finer settings are used where special requirements call for even closer inspection.

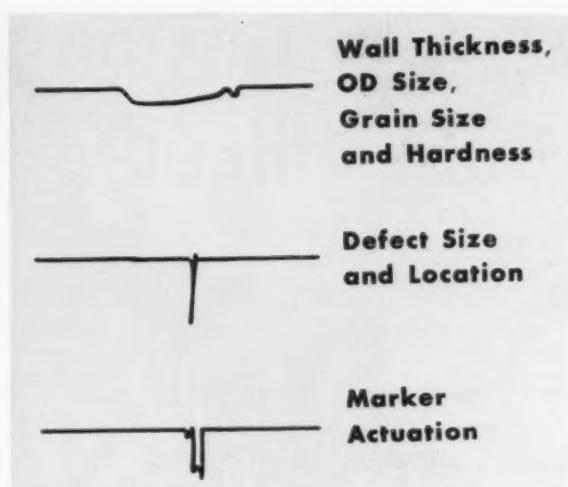
One important advantage is that the method inspects tubing irrespective of the method of manufacturer—whether it be welded, pierced, extruded, or centrifugally cast. Thus the user may now order to a specification based entirely on the quality he requires.

Since the technique permits production testing, Damascopic inspected tubing meets normal trade and industry specifications at no extra cost.

Key in Eddy Currents—The inspection setup utilizes minute eddy currents induced by a radio-frequency field. These explore the tubing and yield information on dimensions, the presence of flaws, as well as changes in mechanical, metallurgical and chemical properties.

By means of suitable controls linked to the eddy current instrumentation, the defective tubing is rejected.

On discovering a flaw, the



long. Defect size and location show up clearly on chart of graphic recorder. Macrograph: 50X magnification.

Eddy Current Test Meets ASTM Area Size Limits on Flaws

Gage	Wall Thickness (in.)	Minor Dimension (in.)	Area Size Length x Depth (sq in.)
20	0.035	0.029	0.001015
18	0.049	0.021	0.001029
17	0.058	0.018	0.001044
16	0.065	0.016	0.001040
15	0.072	0.0145	0.001044
14	0.083	0.0135	0.001205

equipment signals the inspector in the following ways: An audio alarm sounds, a red signal lights and location of the flaw is automatically marked with red dye.

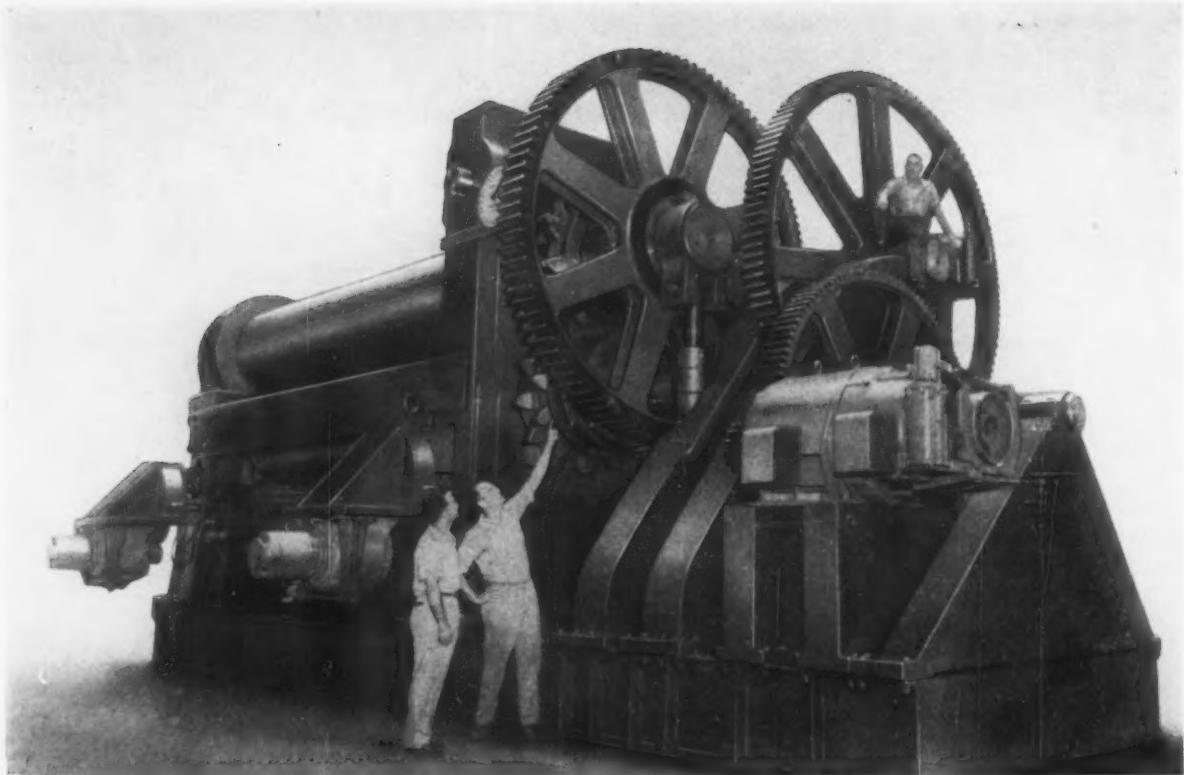
As each piece of tubing passes through the test coils which send and receive the radio-frequency signals, an inked record can be made. Any flaw appears on the chart to become a part of the permanent record of the tube length.

Meets ASTM Needs—As specified by ASTM, the purchaser and manufacturer can agree to substitute a non-destructive test for the hydrostatic test, providing the tester is capable of detecting defects $1/16$ in. in length and one half the wall thickness or defects of any length completely penetrating the wall.

For nuclear and similar applications, the setup satisfies ASTM requirements since it's capable of detecting defects 3-pct of wall thickness or 0.004 in., whichever is greater with a length not to exceed $\frac{1}{4}$ in.

The accompanying table gives the practical range of sensitivity of the Damascopic setup. No mention is made of width of defect, since the circuits will react and produce a signal whether the width is 0.0005 or 0.100 in.

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GIANT ROLLER: Forty-ton pinch type roller can form ordinary plates 4½ in. thick into cylindrical

shapes. Twenty-feet high, unit can exert 2500-ton bending pressure. Entire machine weighs 800,000 lb.

New Giant Roller Takes on Heavier Plate Capacities

Increased capacities in plate bending can result in bigger and heavier weldments. Newly developed roller unit opens the door.

■ Wherever thick plates must be rolled to shape, engineering is on the lookout for larger capacity equipment to do the job. As more advanced machinery is developed, larger weldments can be fabricated.

In answering this call for larger plate capacities, a new roller series has been designed by Bertsch and Co., Cambridge City, Ind. With such a setup 3 to 6-in. thick plates

of any length cold can be rolled into exacting cylindrical shapes. Hot plate up to 10 and even 12 in. thicknesses can be handled in the same manner.

The new roller series is earmarked for the atomic submarine program. But similar machines may find use in nuclear, ordnance, pressure vessel and other shipbuilding work.

Giant Size—Already in operation at General Dynamics' Electric Boat Division, Groton, Conn., is a smaller 40-ton unit. And this roller is so large that 10 freight cars were needed to haul the equipment.

Standing 20 ft high, this same roller is 21 ft wide and 48 ft long. Its three 50-ton rolls can exert a maximum pressure of 2500 tons. Powered by a 300-hp main drive motor and a 200-hp rear roll adjusting motor, the roller is being used to shape hulls for Polaris submarines. Its bending capacity is 4½-in. plate.

Flexible—The roller will not only form straight cylindrical shapes but conical, elliptical and other irregular shapes as well. An initial pinch type machine, it rolls to the extreme edges of the plate at both sides of the butt joint.

How Aluminum Dip Brazing Turns Out Quality Joints

By A. W. Sweet—Mechanized Electronic Mfg. Specialist, Light Military Electronics Dept., General Electric Co., Johnson City, N. Y.

Key to the process is careful integration of design, processing and tooling.

Good equipment and control are vital.

The payoff is high output at low cost, and sound assemblies.

■ Aluminum dip brazing offers many advantages from a design standpoint as well as on the production end. For one thing, distortion, warpage and cracking are minimized or avoided through uniform heating. In addition, the high density bath has a buoyant, supporting effect. Very thin sections can be joined readily to thick sections with no stress risers.

Step brazing of sub-assemblies and assemblies are possible with this new process, because several filler materials with a range of melting points are available.

Excellent appearance results from minimum oxidation and uniform, controlled fillets. Fillets can also be eliminated where they result in undesirable electrical traits, as in radar equipment. Gas tight joints with good mechanical and physical properties can be attained.

Cuts Tooling—Parts can be self-locating to eliminate fixturing. Use of screws, bent tabs, threads, swaging, pins, and tack welding is helpful. Care must be taken to assure that the bath's buoyancy does not misalign or loosen parts.

Quenching after brazing with subsequent aging nearly duplicates the properties of the heat treated alloy.

Large numbers of inaccessible joints can be joined easily. Tolerances can be held to better than ± 0.002 in. The flow of filler metal flushes the flux completely out of the joint, thus minimizing future corrosion problems.

Castings can be brazed (but not as easily) to simplify design of complicated castings and simplify core problems. Inserts can be brazed into a casting. Steel, Monel, Inconel and titanium can be brazed to aluminum with prior surface preparation, such as aluminum coating. Nickel and beryllium require no

preparation for brazing to aluminum.

Heats Quickly—Heating is rapid; salt baths heat parts four to six times faster than regular furnaces.

All joints of an assembly or sub-assembly can be made simultaneously and several assemblies can be processed at one time. The method lends itself to mechanized processing.

Oxidation is prevented by the molten salt cocoon. Thus, cleaning operations are simplified and appearance is improved. Process control is simple, maintenance of equip-



PROVIDES UNIFORM HEAT: Ajax Hultgren salt bath furnace uses immersed electrode heating principle, holds bath temperature to close limits.

ment is low and the method is economical.

Debit Side—Like any other process, aluminum dip brazing also has certain limitations. It's actually unsuitable for some uses and too expensive for others.

Continuous operation and high production is required for economy. This is due to power consumption and the problem of shutting down and starting the bath.

Drag-out must be controlled through design, tooling and processing techniques, since salt is expensive. Flux traps sometimes create such design and process problems

that other joining methods must be used.

Calls for Care—Close temperature control is required because melting points of the filler materials and base alloys are very close. Some alloys with very desirable properties can't be processed; they melt at a lower temperature than the filler metal.

The aluminum alloys which can be brazed are limited. And good results have been attained with only two magnesium alloys.

Joint strength is lower than welded joints, but proper design will give joints stronger than the parent metal. The assembly is in a fully annealed state after processing; it can be heat treated, but distortion may result.

About Joints—Lap, flush lap, tee, corner, angle, flanged, line contact, scarf and butt joints have been used with excellent results. Lap, flanged and tee joints are preferred. Butt and scarf joints are somewhat unpredictable. The lap should be as short as possible (a good rule of thumb is a lap twice the thickness of the thinner member). Joint efficiency should then be 100 pct with failure outside the joint.

It's generally agreed that a tight-fitting joint reduces filler mobility. The filler alloys with the base metal as it flows in a joint and becomes sluggish. Uniform clearances are desirable and necessary for 100 pct sound joints. A clearance of 2 to 6 mils is best, but clearances up to 10 mils have given good results. Parts have been brazed with clearances greater than 15 or 20 mils in long lap joints.

Make Generous Fillets—The filler metal should be placed on only one side of a joint so that it can flow through the joint and wash out the flux. This eliminates flux pockets, porosity, skips and corrosion problems. When filler is placed in a groove, porosity generally results.

Enough filler should be used for a generous fillet. Such a fillet will promote strength and decrease por-

osity. It is desirable to use filler metal shims on certain wave guide hardware in lap and butt joints. In general, the parts will close together one-half the thickness of the shim material under light fixture pressure.

Where fillets are undesirable, experience has shown that a 0.003 in. thick filler shim cut back 1/16 in. from the edge will just flow to the edge of the joint.

Good Properties—As to joint strength, shear values are good (but there isn't a good test specimen). Joints are good under vibration and thermal shock. Fatigue characteristics are good.

Corrosion resistance of aluminum dip brazing approaches that of the parent alloy. Finishes such as anodize and conversion coatings can be readily applied to brazed parts. Adhesion of organic finishes is good.

Heat treatment after brazing will give maximum physical properties and improve corrosion resistance. Parts should be quenched as soon as the filler metal has solidified upon removal from the bath, then solution heat treated for optimum properties. These properties are slightly lower than obtained from proper heat treatment because the quench temperature is higher. It's best to quench from about 950°F.

Further Benefits—Step brazing can be done by successively brazing sub-assemblies into assemblies using fillers of lower melting points. For example, two sub-assemblies of several parts each can be brazed at 1120°F with 718 filler and then brazed into one assembly with 716 filler at 1080°F.

Stop-off materials can be used to prevent flow of filler material. Dag dispersions, Alcoa No. 2 stop-off and furnace cements may be used.

Brazeable alloys include a number of commonly used compositions. Lower brazing temperatures are desirable and depend on the choice of filler alloy. One of the limiting factors for brazeable alloys is magnesium content. Copper has little

How Various Aluminum Alloys Perform

Alloy*	Melting Range, °F	Maximum Brazing Temp., °F
GROUP A		
EC	1195-1215	1180
1100	1190-1215	1180
3003	1190-1210	1180
6951	1140-1210	1120
6053	1075-1205	1095
6061	1085-1205	1110
6062	1115-1205	1110
6063	1140-1205	1140
Cast 43	—	1065
Cast 406	1190-1215	1180
GROUP B		
3004	1165-1205	1100
5050	1160-1205	1100
6151	1025-1200	1080
Cast A612	1105-1195	1100
Cast C612	1120-1190	1120
GROUP C		
5052	1100-1200	1065
Cast 356**	1035-1135	1065
Cast 355**	1015-1150	1065

* Alloys in Group A have good to excellent brazeability; those in Group B require special techniques for specific applications. Brazeability of Group C alloys is very poor.

** T-4 and T-6 condition only with 716 filler.

All cast materials in sand and permanent mold only; diecasting alloys tend to blister.

influence on brazeability in small percentages, but it lowers corrosion resistance. Increasing silicon content tends to lower the melting temperature to a point where the base alloy may melt before the filler.

A brazing sheet of a core alloy with 716 or 718 filler applied to one or both sides in various thicknesses is available. The brazing sheet eliminates filler metal placement, which can be difficult and time-consuming in some assemblies. It also comes with filler metal on one side and a clad or protective coating on the other.

Five-Step Process—Dip brazing is far more simple and much easier to do than either welding or torch brazing. There are five main steps: preparation, preheating, immersion, quenching or air cooling, and cleaning (which includes flux removal).

First, burrs must be removed; they inhibit or prevent filler metal flow.

Next comes cleaning to remove soil and oxides from both parts and filler metal. Deoxidizer isn't needed if parts are brazed the same day they are cleaned. Don't use etch-type cleaners; they remove metal and result in clearance and tolerance trouble.

A good cleaning cycle following soil removal is a 20-second dip at 150°F, or 2 minutes at room temperature, in 5 pct (by weight) sodium hydroxide. This is followed by 2 minutes in 40 pct (by weight) nitric acid, then rinsing.

Clean cloth gloves should be worn to avoid soiling parts. Grease and fingerprints carbonize and prevent filler flow. Tools and fixtures must also be clean.

Place Filler Carefully—Placement of filler metal is most important. Wire, shims, rings, preforms or paste filler metal can be used as in any other brazing process. The filler metal should be secured to prevent motion away from the joint. Equipment for inert arc tack welding filler to the joint is very useful.

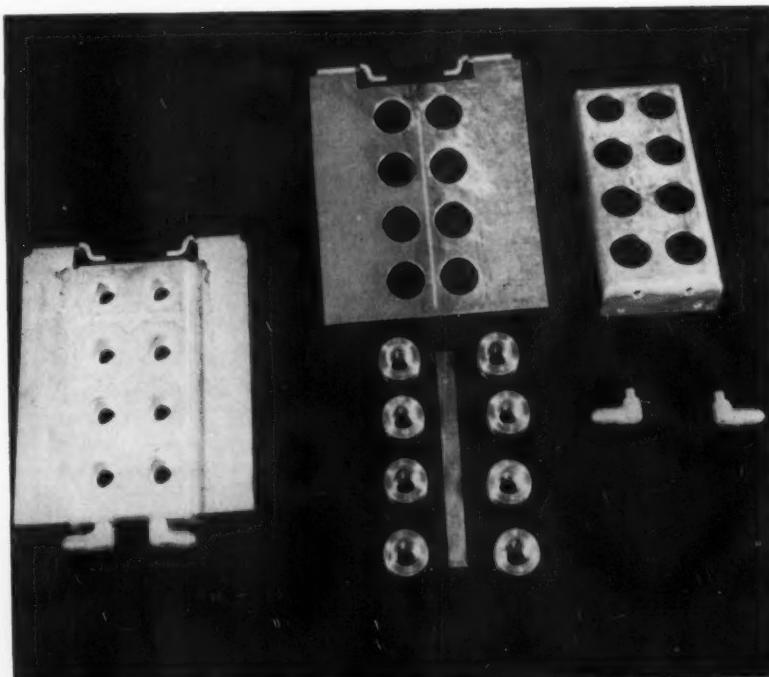
Parts are preheated 900° to 1000°F to remove moisture (which

Fillers for Dip Brazing Aluminum

Alloy	Nominal Composition, pct				Melting Range, °F	Optimum Braze Range, °F
	Si	Cu	Zn	Al		
4043	5.0	—	—	bal	1070-1165	1140-1180
713	7.5	—	—	bal	1070-1135	1110-1140
714	10.0	—	—	bal	1070-1100	1080-1120
716*	10.0	4.0	—	bal	970-1085	1080-1120
718*	12.0	—	—	bal	1070-1080	1060-1120
719	10.0	4.0	10.0	bal	960-1040	1040-1080

* General-purpose fillers available in various wire sizes and sheet thicknesses; others listed find limited use.

Handy and Harman Alumibraze (powder-paste) has melting characteristics similar to 718.



NO PROBLEM: Inaccessible joint between base plate and interior strip is easily made with dip brazing. Tolerances are held to ± 0.002 in.

might cause salt spattering), to heat parts and fixtures uniformly (prevents distortion), and to keep from lowering the bath temperature. Small parts can be preheated by suspending them above the bath. Immersion of a cold part may inhibit filler flow.

Parts should be immersed in the

flux bath the minimum time needed for the filler to flow completely through the joint. This is generally from 15 seconds to 2 minutes depending on mass, type of joint and part shape.

Use thermocouples in setting up both preheating and immersion cycle times. Thermocouples should

be protected by tubes when immersed in the flux.

Quenching and Cooling—Quench in hot water above 150°F as soon as the filler metal has solidified; this gives better physical, mechanical and corrosion-resistant properties.

Often parts must be air-cooled to prevent distortion and warpage or, before quenching, to allow for subsequent aging treatment. This results in less desirable properties.

Flux must be removed immediately and completely and parts thoroughly dried to prevent etching and assure best corrosion resistance. The quench removes most of the flux. Hot water soaking is very helpful where quenching is impractical.

Chemical cleaning must follow. Although several cleaning cycles are satisfactory the following is recommended: Immerse two to four minutes with agitation in 1.5 pct (by weight) hydrofluoric acid; rinse in cold running water and immerse two minutes in 40 pct (by weight) nitric acid; then rinse thoroughly and dry.

Use Good Equipment—The quality of work depends to a large degree on facilities and tooling or fixtures.

The Ajax Hultgren salt bath fur-

nace, which uses the immersed electrode heating principle, is excellent for aluminum dip brazing. All heat is generated within the bath by impressing a low voltage across immersed nickel electrodes. Resistance of the liquid salt generates heat. An electrodynamic stirring action produced by magnetic forces at the electrodes holds bath temperature within less than $\pm 5^{\circ}\text{F}$.

The preheat furnace should have circulating air, high heat capacity and ease of access. Place it as close as possible to the salt furnace to minimize heat loss in transfer of parts.

Quenching equipment consists simply of a corrosion-resistant tank with running water and an overflow. Water temperature should be over 150°F, preferably near boiling.

Cleaning and flux removal equipment consists of corrosion-resistant tanks for acids, alkalies, and hot and cold running water.

Preventing Trouble—Maintenance involves daily removal of sludge formation from the bottom of the bath and the addition of salt to make up for drag-out. Crust should be removed from the top edges of the bath.

Keep an eye on the thermocouples; their failure can result in

overheating and degradation of the salt, burning up a furnace, loss of temperature control with resultant scrap, or freezing of the salt with the costly procedure of starting up again. Furnace controls should be checked at periods of no more than one month.

An alarm system is a must. It'll alert operators during the day and maintenance or patrol people at night when the furnace is out of control.

Fixtures should be eliminated or simplified wherever possible by designing parts to be self-locating. Methods of holding, aligning and self-locating parts may add slightly to part cost but this is offset by the savings in tooling and in processing time. Stick to simple methods.

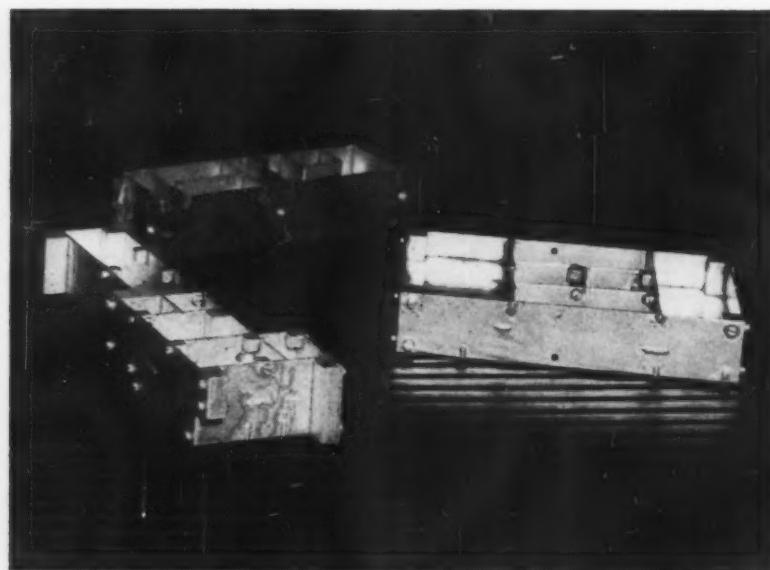
If Fixtures Are Needed—When fixtures must be used they should be designed with the assembly.

Fixture materials for production include (in order of preference) nickel, Inconel, Inconel X and type 316 stainless. Steel can be used for short runs, but iron tends to contaminate the bath; it also scales and corrodes rapidly. Aluminized steel is better.

The fixtures must be spring loaded to compensate for unequal thermal conductivity and expansion coefficients which could cause distortion. Fixtures must provide for rapid and complex flux drainage to minimize flux drag-out and lower flux removal costs.

Acknowledgements—The author is grateful to the following firms for their invaluable assistance and data: Ajax Electric Co., Aluminum Company of America, Dow Chemical Co., and Handy and Harman.

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HIGH PRODUCTION: Aluminum dip brazing allows all joints in these assemblies to be made simultaneously, all three pieces done at one time.

Atom Gage Reads Mold Moisture

Gone is the guesswork in checking moisture in foundry sand. Like a magic wand, a nuclear probe gives direct readings.

■ A new technique is solving an old problem for foundrymen—that of maintaining proper moisture content in sand molds. It's a practical application of nuclear technology.

Key to the method is 32 g of plutonium-239 mixed with beryllium powder and sealed in a stainless steel capsule. Fast neutrons emitted from the plutonium collide with hydrogen nuclei of water atoms in the sand to produce slow neutrons which can be counted electronically.

A Direct Proportion—The number of slow neutrons is directly proportional to the sand's moisture content. The method was developed at General Motor's Central Foundry Div., Danville, Ill.

"This new sand moisture gage," says J. H. Smith, general manager, "has substantially improved our ability to make sand molds of uniformly high quality." It permits closer control of moisture content than ever before. It's expected to solve a variety of foundry problems.

Excessive moisture reduces strength and permeability, he explains. Good molds must have sufficient strength to prevent mold material from being washed into the mold cavity by molten metal and enough permeability to permit steam and gases to escape.

Replaces Hand Test—Before the nuclear device was installed, moisture control depended on an experienced operator's hand test or "feel" of the sand. Adding water in the mulling process depended on judgment. Hopper sand samples were spot checked on laboratory equipment, but this took time while sand batches were mulled.

The new gaging is almost entirely automatic. Into the center of each 3200-lb batch of molding sand in the hopper is lowered the neutron source pellet or plutonium-beryllium powder through a stainless steel tube.

Two neutron detectors in the tube with the neutron source count the slow neutrons. From the count, which is completed in about 45 seconds, is rapidly calculated the percentage of existing water in the batch and the exact amount of water to be added.

Direct Reading—A large dial shows moisture content and quantity of water needed. The muller operator pushes a button to drop the sand from hopper to muller. With a second button, he meters the

desired amount of water into the muller.

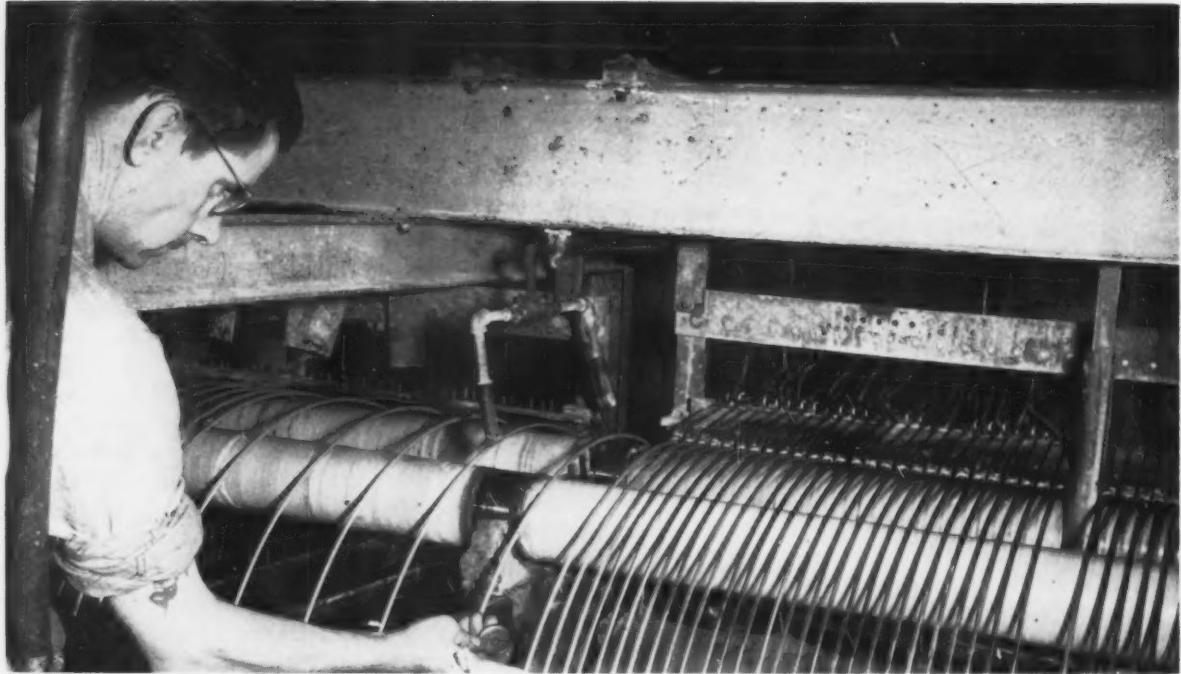
Meanwhile, the nuclear device resets itself to begin counting slow neutrons in the next batch of sand. This checking of every batch reduces human error and insures close limits of moisture content all the time.

Accuracy of the sand moisture gage is better than ± 0.05 pct by weight over a range of 2.5 to 5.0 pct total moisture content.

When not in use, the source is contained in a wax neutron absorbing shield. Similar shielding surrounds the hopper, providing full protection when the source is in the sand. The sand is not contaminated during the moisture check and is safe for handling thereafter.



OUT OF THE LABORATORY: H. A. Burley (left) of GM Research Laboratories and M. J. Diamond of Central Foundry Div. discuss effectiveness of neutron detectors. Production setup replaces sampling methods.



HEAVY PLATE: Helically coiled wire spins into electroplating solution as operator checks bath temperature.

Spiral Setup Plates Wire Fast

A fast efficient electroplating process combines the high tensile strength of steel with the conductivity of copper, nickel or other metals.

Production setup uses compact spiral handling system.

■ Over 5 million lb of copper-coated steel wire have been shipped for communications and other commercial uses, as of July 1st according to National-Standard Co., Niles, Mich., which initiated production just 28 months ago. The wire combines the high tensile strength of steel with the conductivity and corrosion resistance of copper. It's produced by a continuous electroplating process.

A steel wire core continuously flows in helical form between successive controlled plating baths.

"Helical processing makes continuous wire plating economically practical," according to R. W. Elder, company vice-president. "The process produces concentricity of copper around the steel core within about 1 pct of wire diameter," he notes.

Heavy Coat — Commercial success of the process stems from the weight of the plating coat that can be applied. Copper thickness is built up to 40 pct of conductivity wire. The electroplating method gives an integral bond between base metal and the plate. The setup is based on the conductivity of pure annealed copper.

Plated wire produced by this process is shaped and worked without chipping or flaking. It can be bent, flattened, swaged, thread rolled, spot or butt welded.

How It's Done — With the conventional straight-through wire-plat-

ing line floor space and capital investment would be prohibitive. In the spiral technique, however, some 7500 ft of wire is in continuous process in a typical 65-ft unit. Plated wire comes off the line at the rate of 60 fpm.

First step in the process is to draw the steel core wire to a smooth surface. This eliminates surface defects.

Next the coil feeds spirally through a series of cleaning and preparation baths. Proper surface conditioning is important for quality plating. Smoothing action of the drawing combined with the cleaning assures proper adhesion between base metal and copper.

In the subsequent plating baths, thickness of the coating is regulated by varying the number of turns of wire in the plating cells. It's further adjusted by control of the electric

current and speed of wire through the bath.

Finish Varies—The final rinsing completes the actual plating process. After this the plant usually puts the coated wire through a cold drawing operation. Company experts explain that they find the process most economic to plate somewhat larger than finish sizes, then draw down to diameter.

Dry drawing imparts a matte finish, leaves a residual surface lubricant, which is useful in some forming operations. The matte finish can be brought to a high luster by tumbling or burnishing.

Wet drawing gives a super bright or mirror finish. Copper- or nickel-plate wire is annealed without damage to the plating. Annealing, combined with selection from various carbon steel base wires, allows many combinations of tensile strength and temper.

Many End Products—The spiral process is used in coating with nickel up to 10 pct, where special heat and corrosion resistance is needed. Brass coated products are mainly in decorative class: tinsel, jewelry chain, lamp harps, curtain rod, antenna tips, etc.

Communications wire is the volume use of copper coated wire. Other applications are insulation tie wire, transmission lines, wire cloth and building tie wire. Nickel coating is being used for elevated temperature applications needing resistance to oxidation.

Close Control—Tolerances of plating at all thicknesses is excellent. It holds within the 1 pct from the thin coatings of 10 pct up to the heavier 40 pct.

On a $\frac{1}{4}$ -in. diam wire the 40 pct coating would mean a copper thickness of 0.026 in. Photomicrographs show a uniform concentricity on cross sections of all thicknesses.

Other Developments—Development work with the helical coil method forecasts additional possi-



FAST COIL: The 5-millionth lb of Copperply, copper plated steel wire, coils out of final plating line bath at National-Standard Co.



NEAT TWIST: Electroplated wire bond is permanent so it can be worked into tight tie without affecting coating.

bilities. Orville Adler, director of research, reports, "We see a distinct possibility of production plating tubing and other cross-sectional shapes with this method." And, he points out, you can plate other base metals in addition to ferrous kinds.

Some of the other potentials of

the process are for other types of surface treatment of wire, rod and other elongated shapes. In fact the possibility is there for almost any metal that can be spiraled. Phosphating, pickling and cleaning are some of the immediate potential uses.

Computer Holds Stainless Costs

Long-Range Economy Sparks Experiment in Steelmaking

By D. C. Hilty, R. W. Taylor, and R. H. Gillespie, Metals Research Labs., Union Carbide Metals Co., Niagara Falls, N. Y.

With stainless demands on the upswing, how can producers hold quality line and reduce costs at same time?

The digital computer may provide the answer.

■ For stainless steel to continue growing as it has, producers must keep costs down and maintain quality. If these hurdles are cleared, the demand for stainless should double by 1969.

The Metals Research Laboratories of the Union Carbide Corp.

has spent a decade studying the chemistry of stainless-steel melting. Its results have been useful to the steelmaker, aiding him in improving the materials and facilities at hand. Now it has set a new goal: To arrive at the lowest costs for producing the steel alloy, using material price structures and steelmaking methods as guide-posts.

Enter the Computer — To discover such accurate findings MRL has brought in the digital computer to lend a helping hand. In recent tests the computer actually chose the most economical blend of raw

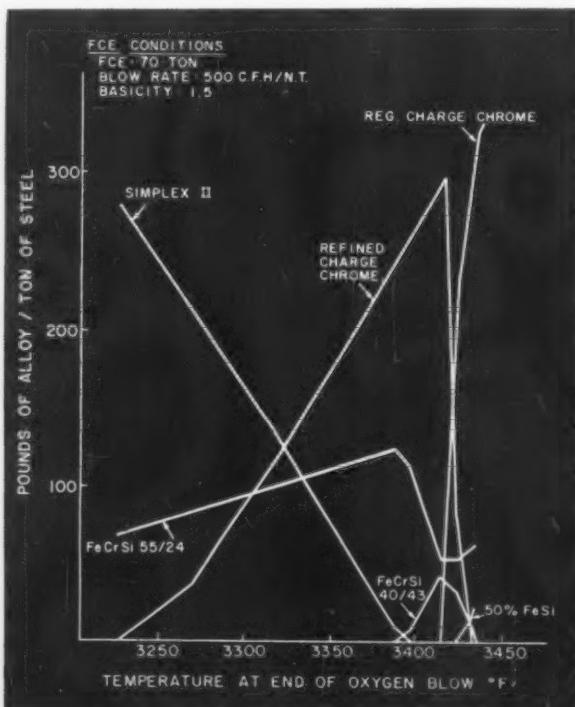
materials for producing a 70-ton heat of Type 430 stainless steel. In the process, it considered over 30 different sources of chromium, iron and silicon, as well as costs of oxygen and lime.

In selecting these materials, many melting variables within the steelmaking process itself were studied. Included were bath temperature before and after oxygen blow, oxygen blowing rate, slag basicity and the proportion of bath melted down at the time that the oxygen blow is begun.

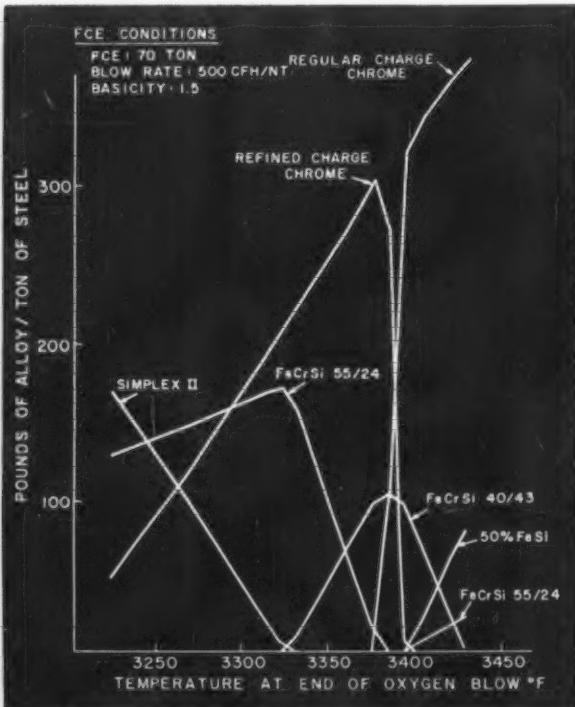
Type 430 Programmed — The

How Temperatures Affect Alloy

Blow Begun at 2910°F



Blow Begun at 2730°F



steel selected for the programming was Type 430 stainless. A 70-ton furnace was included to make this 0.08 C—0.40 Si—16.5 Cr alloy, the carbon content of which was oxidized to 0.05 pct during blow.

Generalized practices for 70-ton furnaces were followed, and all prices were those in effect Oct 1, 1958. Scrap availability was assumed to be 40 pct. One-quarter or 10 pct of the total chromium requirement for steel would be suitable for back-charging as a cooling addition following the blow.

Cost Reduction—Upon completing the run, three money-saving facts were determined. First, allow for higher bath temperatures at the end of each blow. Second, use lower bath temperatures before a blow. And, third, shoot for higher oxygen blowing rates.

When the maximum temperature at the end of a blow is increased, more chromium can be used in the charge as low-cost refined chrome or stainless scrap. And this practice cuts cost. Not taken into consideration in this experiment were the higher refractory costs brought on by the higher operating temperatures.

The Best Blend—The computer also blended materials, where warranted by economics. In fact, when only 75 pct of the bath was melted down at the start of oxygen injection, the computer chose a blend of regular charge chrome and refined chrome.

For many years the old pros at the mills were suspicious of the idea that best economies result when the lowest slag volume and highest chromium recovery are attained. These tests indicated that such is definitely not the case. For the sake of economy, the opposite may be true.

Avenues Ahead—The model used can be modified to include any of the 200, 300 or other 400 grade stainless steels. In the future,

Factors that Govern Economy*

	HEAT					
	A	B	C	D	E	F
CONDITIONS**						
Before Oxygen Blow, °F	2910	2910	2910	2730	2910	2730
After Oxygen Blow, °F	3225	3315	3405	3315	3315	3315
Blow Rate, cfh/net ton	500	500	500	500	1000	500
Melted Before Blow, pct	100	100	100	100	100	75
Charge, lb/net ton						
Steel Scrap	1000	893	855	870	886	869
430 Scrap	508	618	623	628	610	633
Refined Chrome	—	114	282	191	99	118
Regular Charge Chrome	—	—	—	—	—	86
REDUCTION, LB / NET TON						
430 Scrap	204	206	208	209	203	211
55/24 Ferrochrome-silicon	67	99	83	168	51	184
40/43 Ferrochrome-silicon	—	—	26	—	—	—
RESULTS						
Materials Cost \$/net ton	139.77	132.63	124.87	131.53	130.70	132.07
Slag Volume, lb/net ton	127	180	230	280	101	330
Cr in Initial Charge, pct	5.56	9.99	14.33	12.13	9.60	12.43

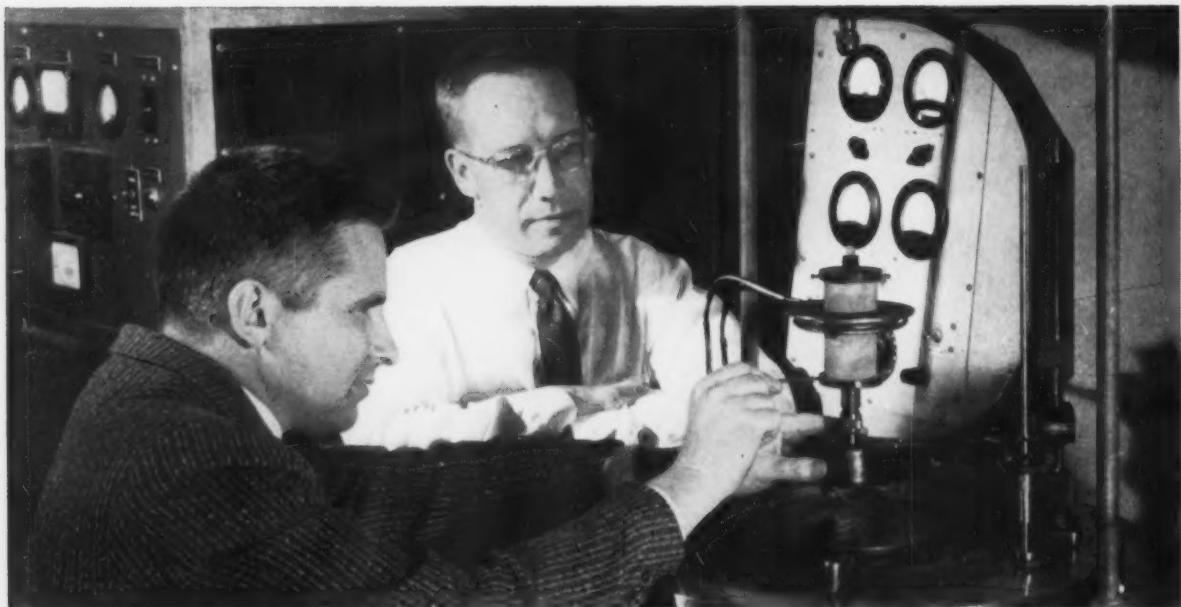
* Results are not specific recommendations since they refer to a particular price structure and a generalized practice.

** Slag basicity, $\frac{\text{CaO} + \text{MgO}}{\text{SiO}_2}$, was 1.5 in each heat.

the test will be able to consider such variables as furnace time, refractory consumption, power demand and the availability of materials.

The model's biggest feature is its

ability to estimate economic effects caused by changes in melting conditions. Not only that, but it will be able to realign whenever price changes occur.



STABLE MELTING: At Bell Laboratories, K. E. Benson positions tubular sample of iron in induction-

heating coil, as W. G. Pfann looks on. Despite large cross section method produces stable molten zones.

How Cross Section Affects Floating Zone Refining

Cross section of material turns out to be the controlling factor in boosting capacity of zone refiners.

■ A new method increases the volume of material that can be purified in zone refiners. At the same time, it also treats thinner cross sections than have been feasible before.

The original floating zone technique proves highly valuable in producing extreme purity in reactive metals and semi-conductors. It's because the molten material is never in contact with a container. However, until now it has been limited to small amounts of material.

Problem of Height — The primary limitation is the fact that for any given material, there is a max-

imum height of molten zone which can be supported by surface tension. In large diameters, it takes so long for the rod to melt through, that zone exceeds maximum height.

In getting around this difficulty, the new method uses specially shaped cross sections, such as flat plates and tubes. The cross sections are thin enough to permit fast melting but are so wide that total area treated is greater.

While it's almost impossible to produce a stable molten zone in a 1-in. diam iron rod, try the same cross-sectional area in a 2-in. diam, $\frac{1}{8}$ -in.-wall tube. It becomes easy to melt the entire cross section of the tube without exceeding the maximum height.

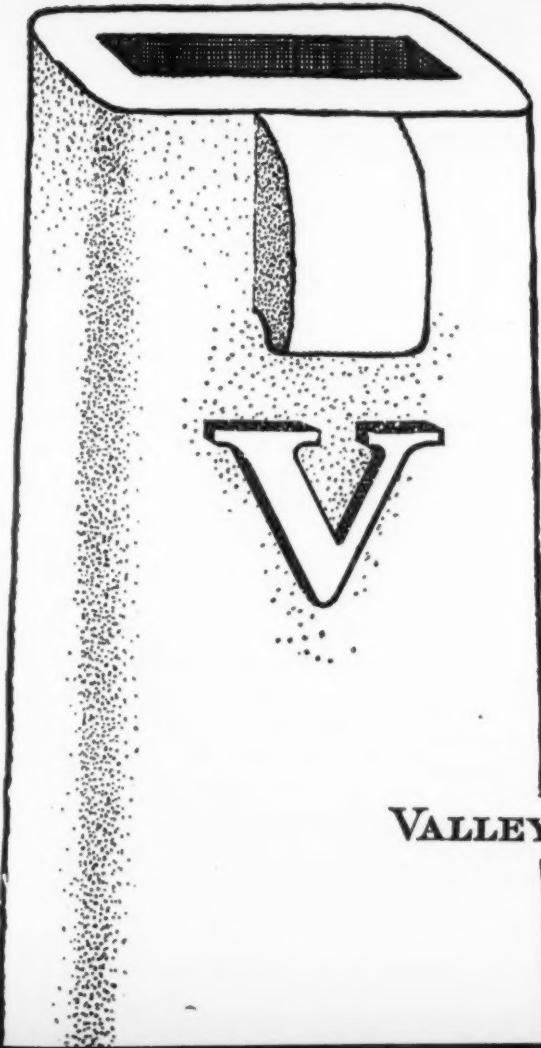
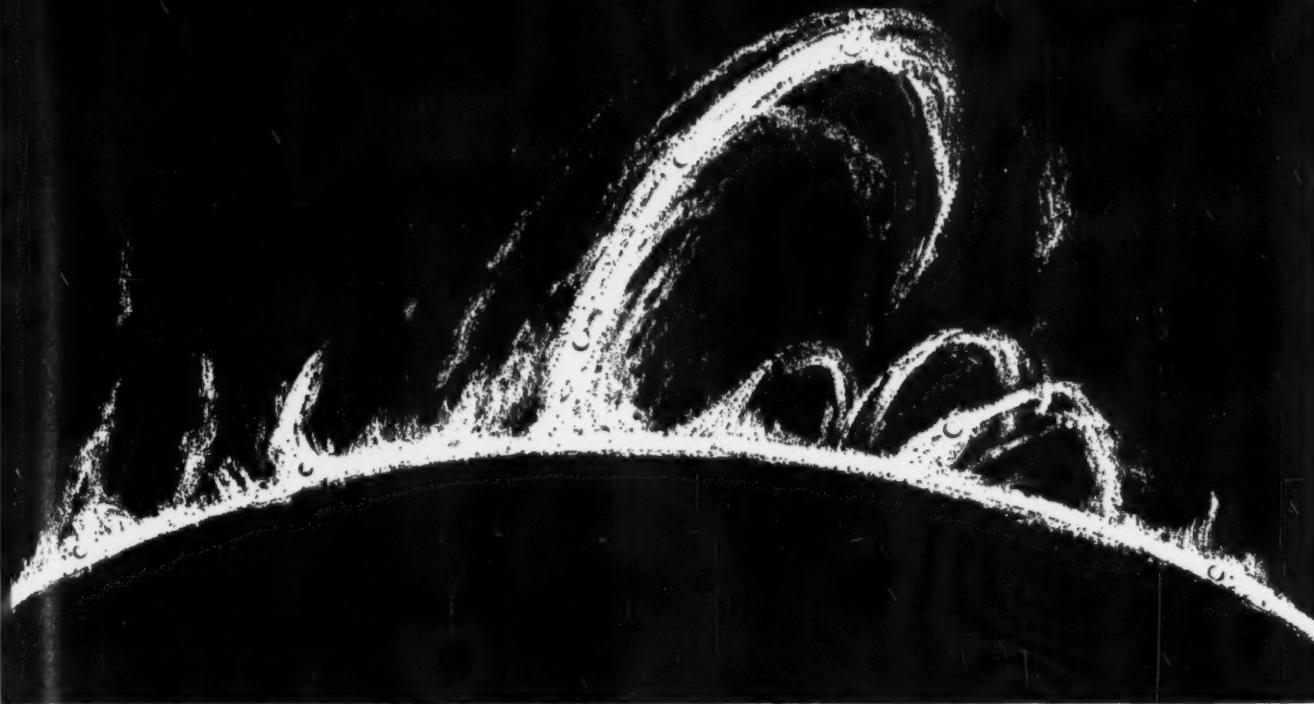
Works on Sheets — In contrast to the rod floating-zone method in which maximum stable zone height

decreases to zero as rod diameter decreases, the new method works well on very small plate thicknesses. Treatment of sheets in the order of mils or less is now practical.

Stable, wide molten zones have been maintained experimentally in one or both cross-sectional shapes, in such materials as silicon, iron, tin, gold, lead, bismuth, and water.

It's expected that the method will treat cross-sectional areas at least five to ten times those currently worked. The wide zone technique should also make the floating zone method work on materials for which the conventional method is not practical.

Both the original zone refining technique and the improved method were discovered at Bell Telephone Laboratories, New York, by W. G. Pfann and H. C. Theuerer, respectively.



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but even then

steel will be poured into

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You Arbitrate It!

NO VACANCY

From the files of
The American Arbitration Association

■ When one of three final inspectors in a shop making chemical plant equipment had to go to the hospital for an operation, Don L., whose regular job was sub-inspector, was asked to fill in. The absence was expected to be for about two months and Don looked forward to that period of time at the higher rate.

But three weeks later management decided that the two regular final inspectors could handle the load. They therefore ordered Don back to his sub-inspecting job at the lower rate.

"Wait a minute," protested the shop steward. "Once you assign a man to a vacancy you have to keep him there till the regular man returns to work." To support that contention, he quoted a contract clause that said temporary assignments were to be made "for the duration of the vacancy."

The personnel manager had a ready answer: "Absence is one thing, and vacancy is another. Work slackened off and the vacancy no

longer exists, even though the regular man is still absent."

Eventually, the case went to arbitration under the Rules of the American Arbitration Assn. **How Would You Rule?**

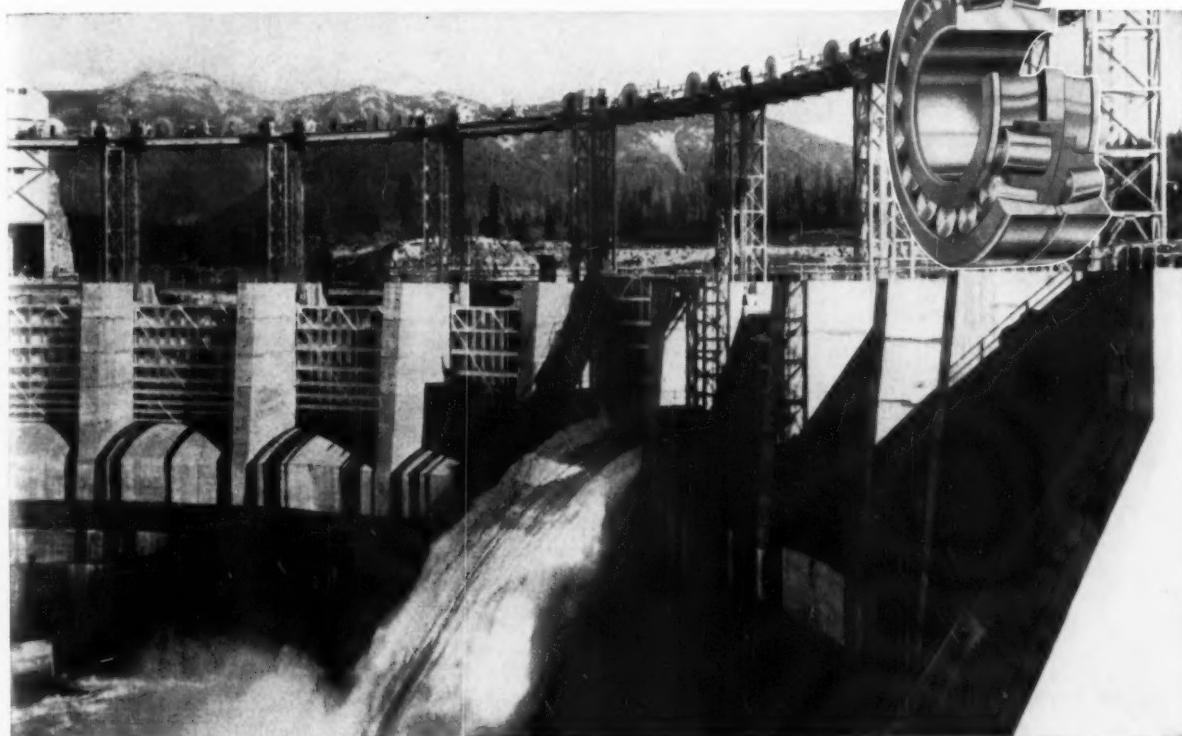
The arbitrator agreed with management. "Absence is, in its simplest form, the non-presence of an individual," he said. "Such non-presence is a matter of fact. The word 'vacancy,' however, cannot be defined so generally. Where the absent employee has been replaced and such replacement has been terminated prior to the return of such absent employee, the Company in effect has determined, as it has a right to, that the vacancy has also terminated."

If the contract had referred to "the duration of the absence" instead of "the duration of the vacancy," the decision would have gone the other way.

CAUTION: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.



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Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearing.

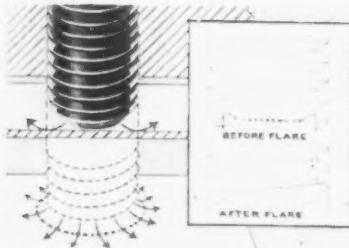
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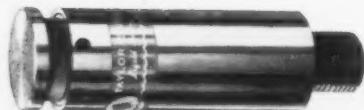


Flare-Locking Setscrew Sticks When Idle

A point which flares out when tightened prevents this setscrew from shaking loose when not in use. Once flared, it serves as either a tightening or adjusting screw and has exceptional point gripping

power. It can be removed without damaging the mating thread. Useful in anything subject to vibration, it is available in most metals in hex, slotted, or slotted heads. (Set Screw & Mfg. Co.)

For more data circle No. 1 on postcard, p. 115

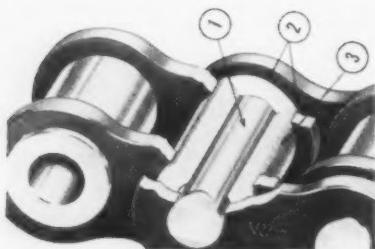


Liquid Spring Is Compact, Has High Capacity

A 1 1/4 x 3 1/2-in. spring uses liquid compressibility to accept preload from 500 to 5000 lb and end load of 8000 lb. Offering greater capacity in design of compound

dies, it can also be used as a shock-absorber to relieve excessive loads on structures or tools. (Taylor Devices, Inc.)

For more data circle No. 2 on postcard, p. 115

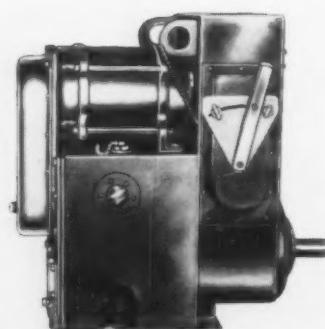


Oilless Bearings Come to Drive Chains

Faulty chain lubrication does more damage than years of normal service. Oil-impregnated, sintered-steel bushings provide lifetime lubrication for a line of chain. Pressure and heat cause lubricant to flow to the three critical surfaces

pictured, giving every working part of the chain a constant supply of lubricant. When drive stops, bushings reabsorb oil, assuring permanence of oil supply. (Whitney Chain Co.)

For more data circle No. 3 on postcard, p. 115

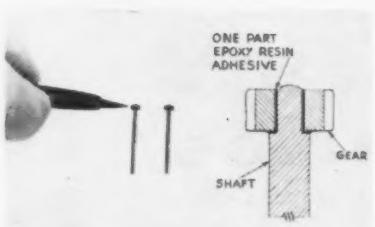


Heavy-Duty Hydraulic Transmission with Motor

A 1 1/2-hp hydraulic transmission gives infinitely variable speed from 0 to 350 rpm in either direction. Forward and reverse speeds can be set identical or different as preferred. Reversing is instantaneous, and speed control is smooth, precise, and constant. An integral

torque multiplier permits high-torque applications. It is ideally suited to heavy-duty applications where variable speed and instant reversing can increase production and efficiency, such as machine-tool drives, tappers and reamers, etc. (Roberts Mfg. Co.)

For more data circle No. 4 on postcard, p. 115



Adhesives Useful in Joining Small Parts

Assembling metal parts such as small pinion gears to rotor shafts by adhesive bonding has advantages over welding or brazing. Heat, which may distort parts or sap heat-treat hardness, is not used, and rejects are eliminated. Also, secon-

dary operations required with fusion methods are disposed of. Thus, costs are greatly reduced by elimination of rejects, secondary operations, and 100-pct inspection. The one-part epoxy adhesive used in the pictured application has good

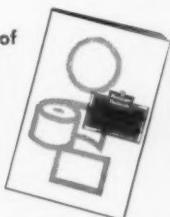
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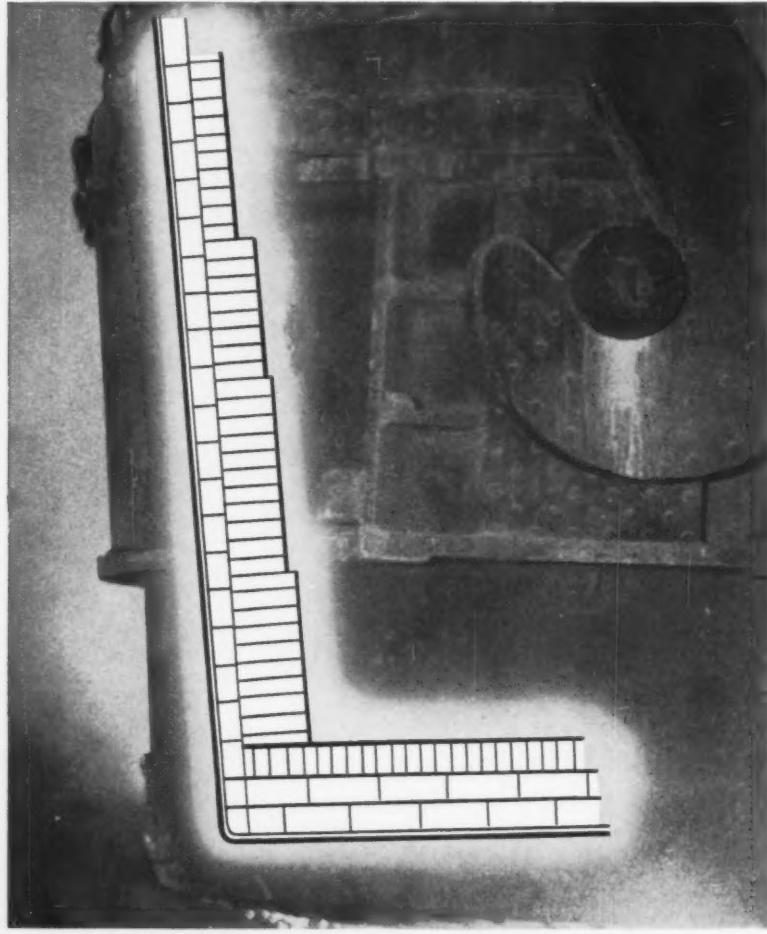
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flexibility and high shear strength. Easy to apply and cure, it is good in service from -67° to 250°F . (Minnesota Mining and Mfg. Co.) For more data circle No. 5 on postcard, p. 115

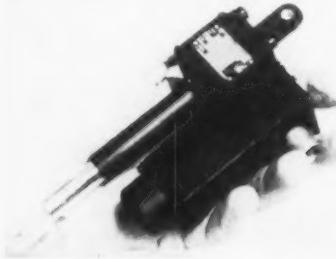
Quenching Additive

Infiltration of chlorides into nitrate-salt quenching baths—which slows quenching action, increases salt melting points, and forms sludge—is eliminated with a new compound. About 4 lb will reduce chloride content by 50 pct and make bailing out the furnace unnecessary, thus saving time and money. (The A. F. Holden Co.)

For more data circle No. 6 on postcard, p. 115

Linear Actuator

A lightweight miniature linear actuator incorporates a long-life slip clutch to eliminate limit switches. Available in various combinations of speeds and strokes, it will handle loads as high as 400 lb. A choice of motor positions is available, and it is possible to add



position indicators, synchros, or flex shaft takeoff in various positions. The adjustable slip clutch absorbs the inertia of the motor rotor at the ends of extend and retract positions, and provides overload protection. (Lear, Inc.)

For more data circle No. 7 on postcard, p. 115

Silicon Carbide

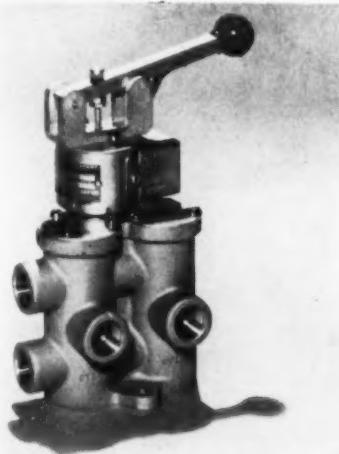
A self-bonded, impervious form of silicon carbide has operated 1700 hours in a highly corrosive application where super steel alloys lasted only 48 to 75 hours at best. The part was a wear sleeve

carrying slurry. It is also useful as apex disks in handling iron-ore slurry. One such disk showed no wear after 2500 hours, whereas the best metal alloy disk averaged 24 to 36 hours. Formable to any shape, this material can be worked to plus-minus-0.010-in tolerance, and diamond grinding can produce 5-microinch finish. (The Carborundum Co.)

For more data circle No. 8 on postcard, p. 115

Solenoid Air Valve

Useful for air systems to 150 psi, a solenoid valve can be actuated by hand when needed. It is thus valuable in setups requiring skill and judgment before letting power operation take over. System failures



can be checked without halting production. Where powdery substances are handled, it enables the operator to work hopper doors and free jams without interrupting the electrical cycle. (Barksdale Valves)

For more data circle No. 9 on postcard, p. 115

Honeycomb Doors

A company has produced a hollow steel door reinforced with a honeycomb core. Test reports show that this reinforcement is many times stronger than the steel channels used previously. The door maintains its flatness well, and is sound-resistant. It is available in a variety of types and styles for all uses. (Steelcraft Mfg. Co.)

For more data circle No. 10 on postcard, p. 115



day in - day out

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Atlas cars like the 75-ton ore transfers above are built to the individual load and schedule of each user. This custom engineering method, with matching care in manufacturing, assures dependable service incorporating all approved personnel safety features.

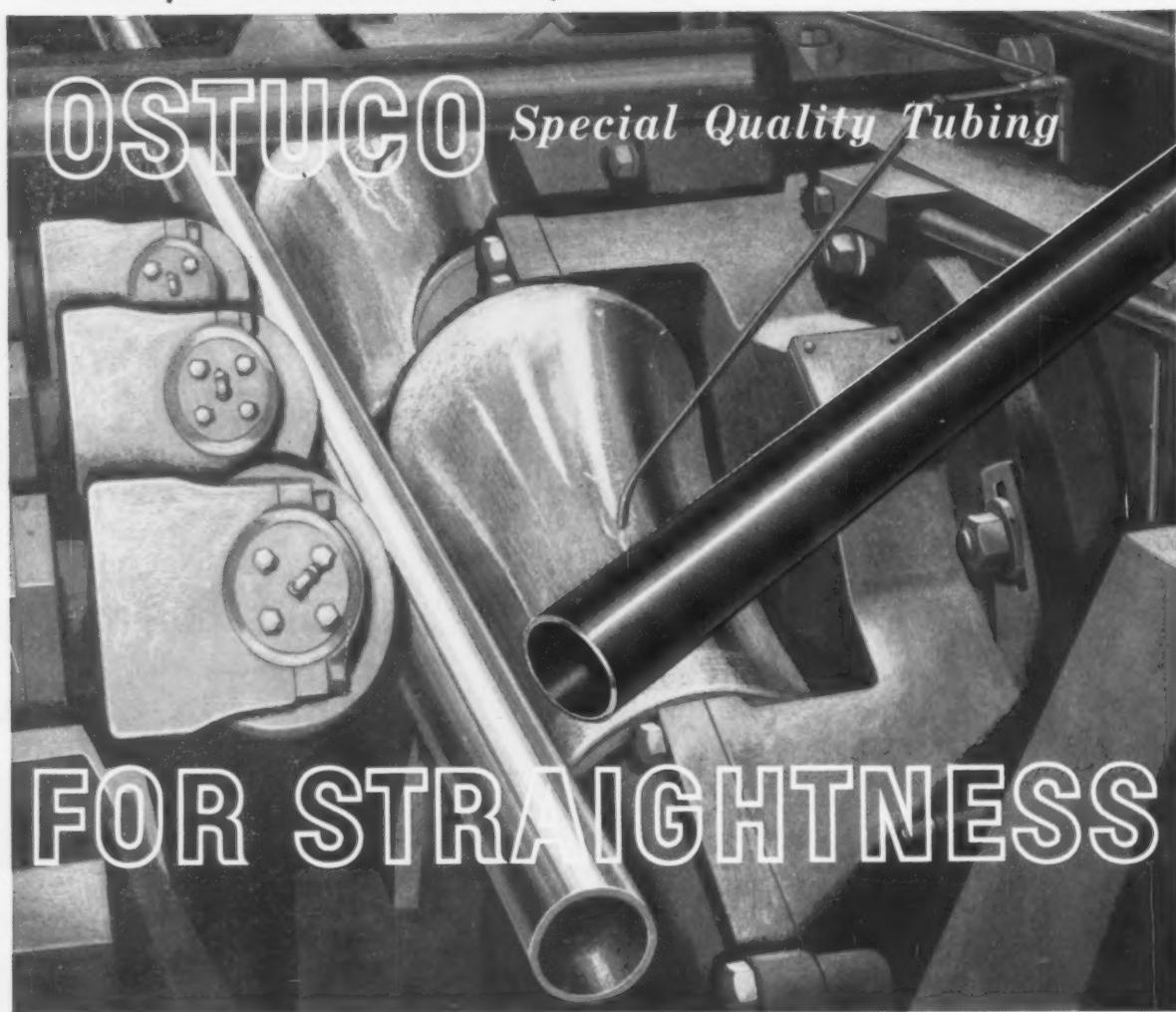
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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 115.

Window Units

Window units for observation of oil supply, meters, and operation of internal machine parts are described and illustrated in a four-page leaflet. (Bijur Lubricating Corp.)

For free copy circle No. 11 on postcard, p. 115

X-Ray Inspection

Use of X-ray photography in the construction of pipelines is described in a booklet. Use of isotope carriers is covered. Causes of welding defects in this type of construction are also discussed. (The Gaevert Co. of America, Inc.)

For free copy circle No. 12 on postcard, p. 115

Lift Trucks

Fast lift speed and short turning radius are important features of a series of 3-, 4-, and 5-thousand-lb-capacity lift trucks described in an eight-page brochure. The patented Monotrol control system is used. Many important options are offered. (Hyster Co.)

For free copy circle No. 13 on postcard, p. 115

How to Weld Tubing

A bulletin on the welding of a line of stainless tubing and pipe provides information on the welding

characteristics of both austenitic and ferritic types of stainless steel. (Tubular Products Div., The Babcock & Wilcox Co.)

For free copy circle No. 14 on postcard, p. 115

Heat Treating

Atmosphere (hydrogen, ammonia, helium, air, etc.) heat treating applications are covered in a newsletter. Simultaneous brazing and hardening of some stainless parts is also covered. (Ferrotherm Co.)

For free copy circle No. 15 on postcard, p. 115

Presses

A 32-page brochure covers a line of presses and accessories, including a four-column press created for die-cast trimming, pelleting, progressive die production, and specialized types of assembly. (Denison Engineering Div., American Brake Shoe Co.)

For free copy circle No. 16 on postcard, p. 115

Perforated Screens

How to specify perforated metal for coal and aggregate screens is described in a brochure. (Cross Perforated Metals Plant, National-Standard Co.)

For free copy circle No. 17 on postcard, p. 115

CO₂ Welding

Welding of mild and low-alloy steels with carbon dioxide shielding gas is discussed in a 24-page booklet. A line of equipment used in the process is included. (Air Reduction Co., Inc.)

For free copy circle No. 18 on postcard, p. 115

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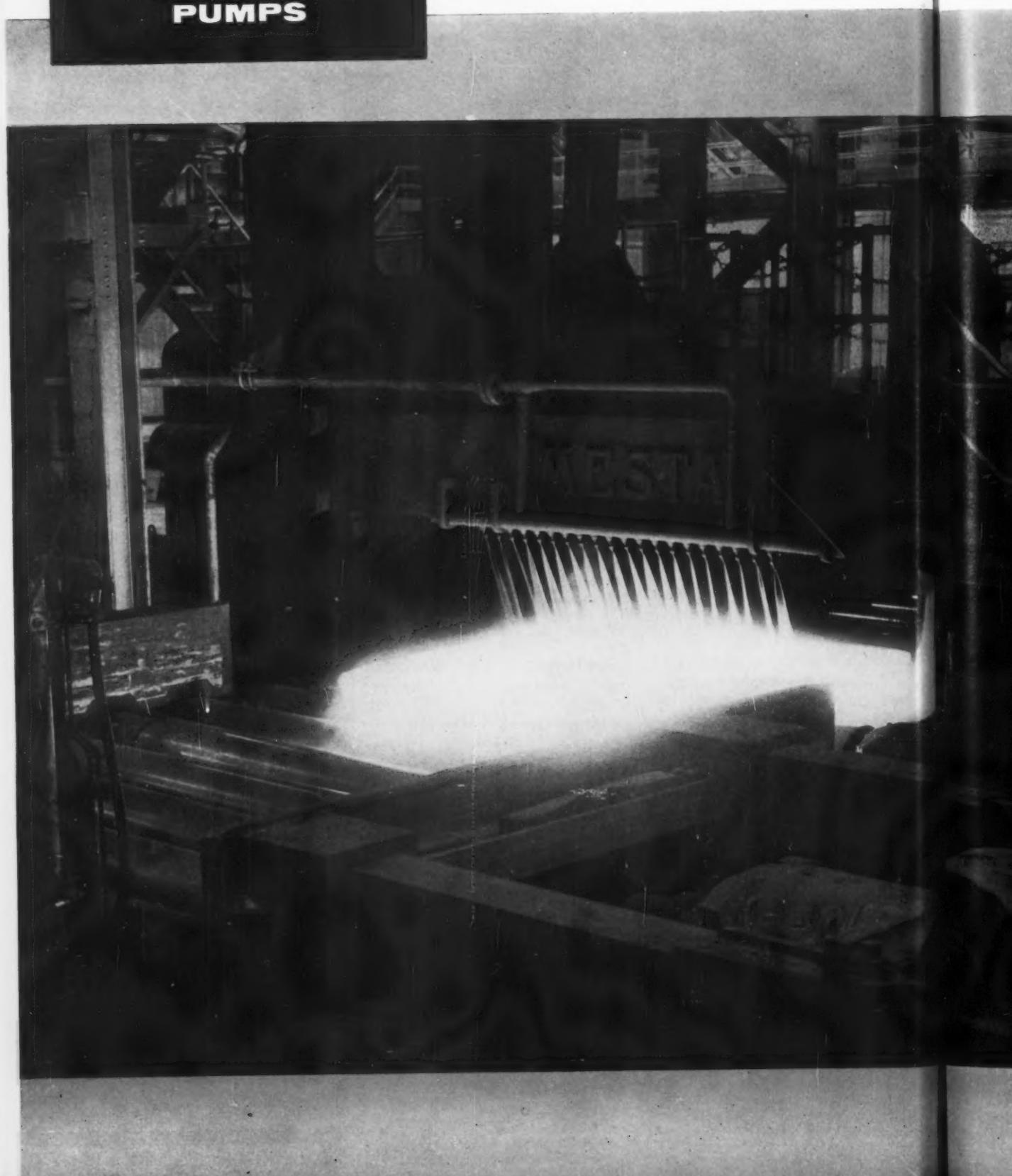
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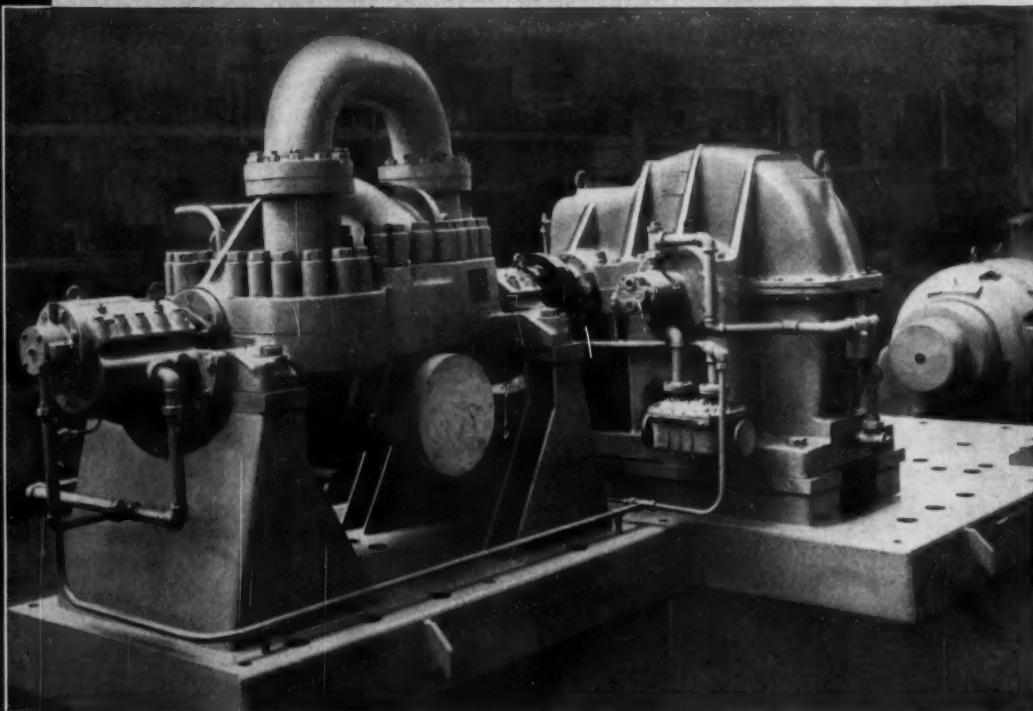


e descaling at Lukens Steel

Latest successful technique of high-pressure descaling is now being performed in this modern steelmaking facility designed by Mesta Machine Co.

The initial high-pressure descaling operation uses De Laval split-case multi-stage pumps as shown in the photograph below. Each pump supplies cold water at 1000 gpm and 1600 psig. Electric motors rated at 1750 hp drive the pumps through speed increasers which raise the speed from 1200 rpm to 4250 rpm.

De Laval pumps also serve Lukens on a 1200 psig descaling system in another section of the Coatesville, Pa. mill.



One of several arrangements available for descaling service at pressures of 1000-1200-1600 psig and capacities to 2200 gpm.



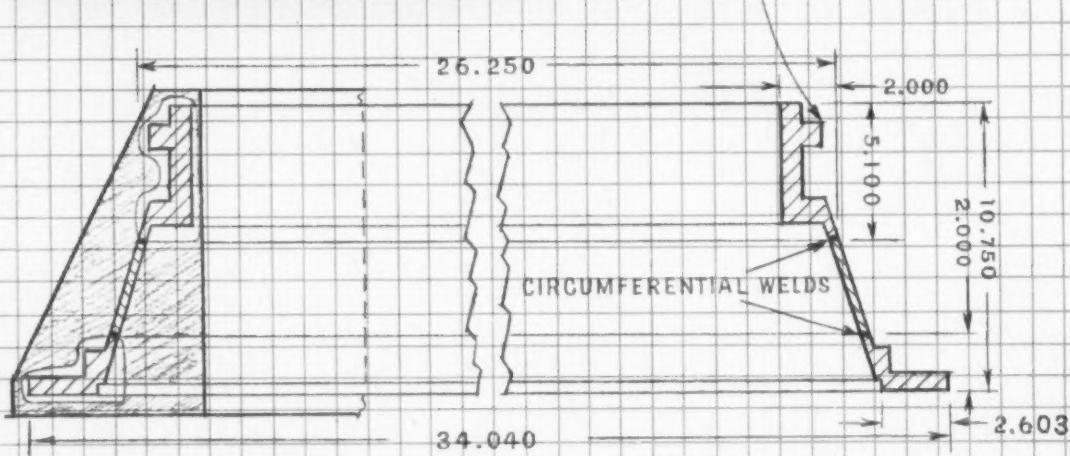
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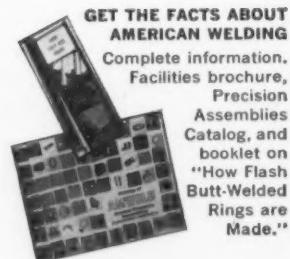
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With experience and know-how gained from working high-strength, high-temperature alloys, Amweld engineers and metallurgists frequently suggest fabricating techniques to solve tricky problems—and reduce manufacturing costs.

Amweld's extensive know-how in welding, forming, and machining of welded products and assemblies is available to you. Write or call today. We will be glad to study your problem and to provide subcontracting service on prototype or production orders.



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FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Screw Packaging

A "bulk packing chart" gives complete information on the author company's system for packing and palletization of its screw products, designed to fit into modern methods of material movement for users of bulk screws. (Southern Screw Co.)

For free copy circle No. 21 on postcard

Use of Limit Switches

Information on wiring, cam design, actuating rods, and location is presented in "Suggestions for the Proper Application of Industrial Limit Switches," a 10-page pamphlet. (Micro Switch Div. of Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 22 on postcard

Turret Drill

A bulletin covers the improved Burgmaster 1C six-spindle turret drill, with power-indexing turret, precision depth control, and 12 spindle speeds, plus accessories. (Burg Tool Mfg. Co., Inc.)

For free copy circle No. 23 on postcard

Industrial Metals

A 12-page catalog describes some sixty chemicals, minerals, and metals for use in industry, including lithium, electromanganese, zirconium, nickel, cobalt, ferro alloys, and metal powders. (Foote Mineral Co.)

For free copy circle No. 24 on postcard

Adjustable-Speed Drive

Adjustable-speed and drive control problems are discussed in a booklet, along with applications,

and illustrations of methods and types of remote and automatic control. A line of infinitely variable speed variators, in 18 sizes with horsepower range from $\frac{1}{2}$ to 16 at 1800-rpm input, is illustrated. (The Cleveland Worm & Gear Co.)

For free copy circle No. 25 on postcard

Bearings

Manufacturing facilities and a complete line of ball and roller bearings are described and illustrated in a six-page brochure. (International Ball & Roller Bearing Co.)

For free copy circle No. 26 on postcard

Shell-Core Machine

A line of machines for producing cores for shell-core molding is described and illustrated in a brochure. (Dependable Pattern Works)

For free copy circle No. 27 on postcard

Job Shop

Engineering services and manufacturing facilities of a large metalworking job shop are illustrated in a 12-page brochure. (Ravenna Metal Products Div. of Standard Screw Co.)

For free copy circle No. 28 on postcard

Cut-Down Machine

A precision angle-cutting cut-down machine (a type of cutoff saw) is reported to be a good performer in the cutting-off of extruded aluminum and magnesium forms. It is illustrated in a brochure. (Irvington Machine Works)

For free copy circle No. 29 on postcard

Ladder Truck

A leaflet describes and illustrates a mobile ladder truck which carries tools, locks in desired position, and provides telescoping guardrail protection for a worker on top. (Safe-Lad Mfg. Co.)

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Silicon Alloying

"Silicon in Cast Iron," an eight-page booklet, describes the role of

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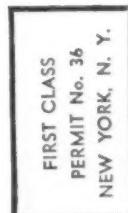
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FREE LITERATURE

silicon in foundry practice. It explores silicon's function in cast iron, and describes various alloys designed for addition to the melting furnace and alloys for silicon addition to cast iron. Other pertinent information is included. (Ohio Ferro-Alloys Corp.)

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Cutting Tools

Over 1000 standard end mills and milling cutters are listed in a 40-page catalog and price list. (Illinois Tool Works)

For free copy circle No. 32 on postcard

Worm-Gear Jack

A series of eight worm-gear jacks, with capacity from 2 to 100 tons, is illustrated and specified in an eight-page brochure, along with some suggested industrial applications. (Duff-Norton Co.)

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Welding Equipment

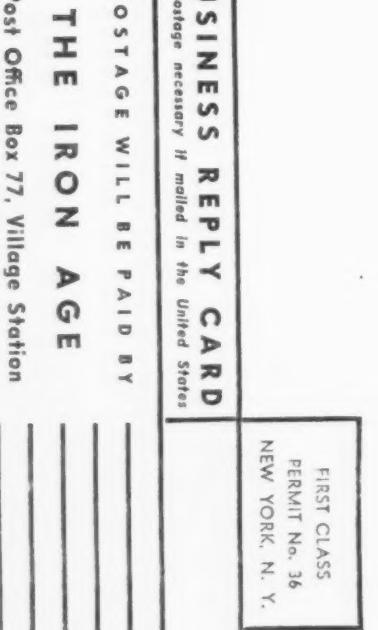
A 12-page catalog presents a complete line of machine cutting torches, tips, and accessories for use with acetylene, propane, natural, and city gas. Straight-line cuts on steel forms from $\frac{1}{8}$ to 48 in. thick can be produced. (Air Reduction Co., Inc.)

For free copy circle No. 34 on postcard

High-Temp Tubing

Small tubing of A-286, a high-temperature alloy, is described in a brochure. An austenitic iron-nickel-chromium alloy, it can be precipitation-hardened for greater strength. (Superior Tube Co.)

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pansion of already established ones. (Commonwealth of Pennsylvania, Dept. of Commerce)

For free copy circle No. 36 on postcard

Numerical Control

A complete line of standard numerical positioning control packages for use on any machine requiring point-to-point positioning of linear- or rotary-motion members, is described in a six-page bulletin. (General Electric Co.)

For free copy circle No. 37 on postcard

Press Brakes

A bulletin covers a redesigned and expanded line of press brakes. Fully described are 15-, 30-, and 60-ton machines. Eight different models have bed lengths from 4 to 14 ft and mild-steel bending capacities to 3/16 in. (Niagara Machine & Tool Works)

For free copy circle No. 38 on postcard

Cylindrical Grinder

A 16-page catalog describes and illustrates a 12 x 28-in. general-purpose precision cylindrical grinder and shows the variety of grinding operations that can be performed. Standard and extra equipment are listed. (Landis Tool Co.)

For free copy circle No. 39 on postcard

Miniature Fasteners

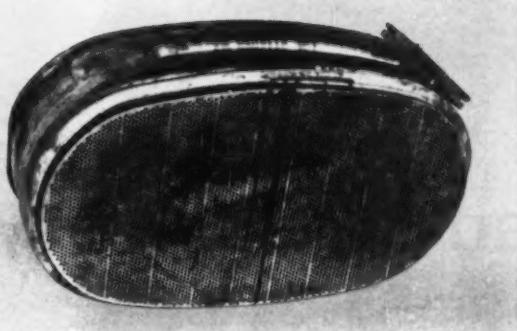
Latest designs in miniaturized self-locking fasteners are presented in a 32-page catalog. Economy and weight savings are discussed. (Elastic Stop Nut Corp. of America)

For free copy circle No. 40 on postcard

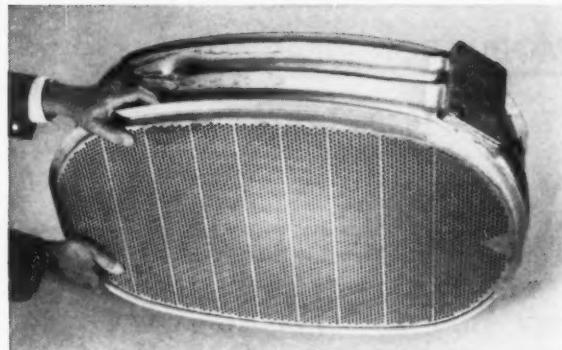
Diamond-Wheel Grinding

"Carbide Grinding with Man-Made Diamond Wheels" presents facts and application recommendations concerning man-made diamonds and wheels. Two advantages over natural diamonds are stressed: freer cutting and less tendency to load up with metal. (The Carborundum Co.)

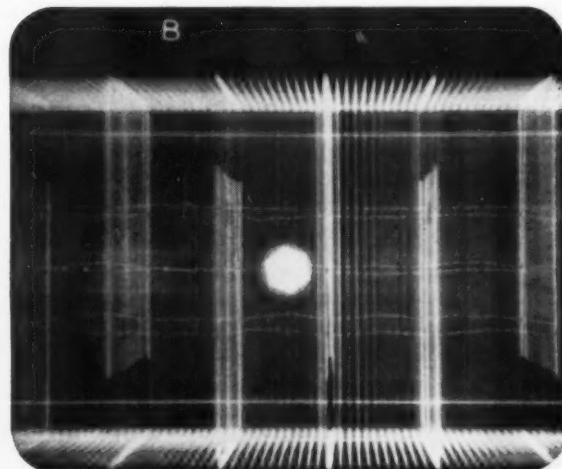
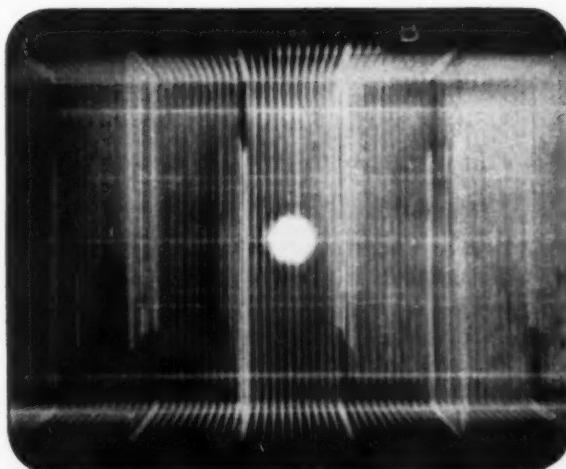
For free copy circle No. 41 on postcard



An oil cooler as it comes from the airplane engine. Radiograph below shows accumulations of sludge and dirt on the tubes.



After cleaning, the oil cooler is ready to return to its job. Radiograph below shows dirt gone and passages unrestricted.



To keep an engine's bloodstream clean

OIL COOLERS are vital to today's aircraft engines. At overhaul time they must go back on the engine clean as new. No minute particles of carbon or metal can remain to be a threat to the renewed engine. Cleaning them has become a specialty with SMS Instrument and Accessories Corp. of Idlewild Airport, N. Y. C.

To show that each cooler they clean

is free of debris, it is sent to Industrial X-ray Incorporated, New Hyde Park, New York, to be radiographed. And when the cooler goes back to its job, its x-ray certificate of cleanliness goes with it.

In such inspections of assemblies, in quality control, in nondestructive testing, radiography provides a means of "seeing" internal conditions and

also a lasting record of what is seen.

Producers of castings, and makers of welded products, find radiography a means of expanding their business and making sure only high-quality work is delivered.

Would you like to learn how it could help you? Contact your Kodak x-ray dealer or the Kodak Technical Representative to talk it over.

X-ray Division . . . EASTMAN KODAK COMPANY . . . Rochester 4, N. Y.

Read what Kodak Industrial X-ray Film, Type AA, does for you:

- Speeds up radiographic examinations.
- Gives high subject contrast, increased detail and easy readability at all energy ranges.
- Provides excellent uniformity.
- Reduces the possibility of pressure desensitization under shop conditions.

Kodak
INDUSTRIAL

New Equipment and Machinery

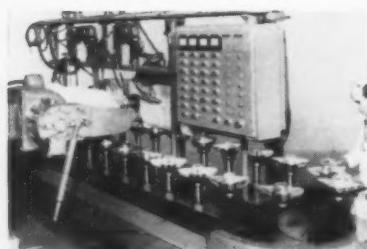


Shears up to 10-Gage Sheet Steel with Ease

A rugged 10-ft, 10-gage power squaring shear can accurately shear any sheet, through 10-gage steel. The action is exceptionally easy,

and vibration is practically nonexistent. (The Peck, Stow & Wilcox Co.)

For more data circle No. 42 on postcard, p. 115

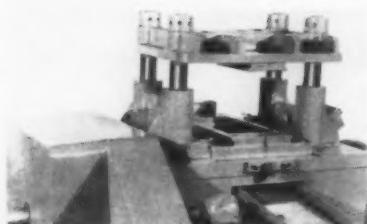


Automatic Machine for Polishing and Buffing

A line-type automatic polishing machine conveys parts on platens at selected speed under four separate 15-hp lathes fitted with buffs, polish wheels, or abrasive-belt heads, and including liquid-compound applicators. Platens can ro-

tate continuously or be indexed from station to station. Each lathe moves down automatically to make up for wheel wear. The final lathe applies coloring, if used. (Acme Mfg. Co.)

For more data circle No. 43 on postcard, p. 115

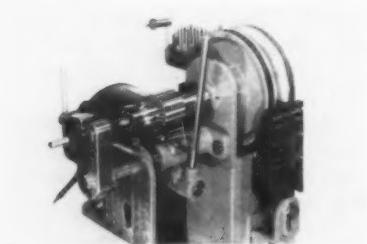


Cuts Off, Notches, Permits Use of Coil Stock

A heavy-duty flying-die-type press works accurately at high speed to cut off or pre-notch rolled formed materials. It can work coil stock instead of cut lengths, cutting costs by reducing scrap and produc-

ing more uniform shapes. It comes in 4- to 120-ton capacities, runs at 300 rpm. Adjustments are simple to make. (Dahlstrom Machine Works, Inc.)

For more data circle No. 44 on postcard, p. 115

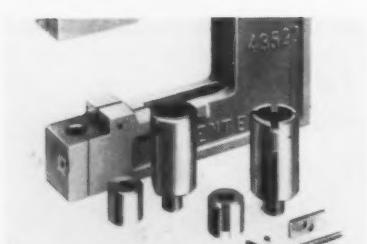


Hand-Fed Threader Good for Variety of Jobs

A small, portable, low-cost, hand-fed power threader taps holes, cuts external threads, and performs other common drill-press secondary operations in metal or plastics. Since work is hand-fed, the operator

can feel strain, and ease off the feed rate to prevent breakage of taps, etc. This makes the machine useful on experimental or short runs, or on delicate jobs. (Sensi-Threader Sales Co.)

For more data circle No. 45 on postcard, p. 115



Button Die Base Cuts Punching Costs

This manufacturer's Type "CJ" Hole Punching Units can now be equipped with a new-type die base which cuts replacement costs of round and shaped dies by 50 pct. Instead of replacing an entire pedes-

tal die, it is now necessary only to replace a low-cost die button, which is readily locked in place by a setscrew. They are available in a complete range of sizes to punch up to $\frac{1}{4}$ -in. steel. (Wales-Strippit, Inc.)

For more data circle No. 46 on postcard, p. 115



The joker in making aluminum killed steels is the 7¢ per pound you're *supposed to be saving* by using manganese alloys instead of pure electrolytic manganese. Sure, the *manganese* in the alloys is cheaper . . . BUT it's the *impurities* that cost you money . . . in lower product quality and in longer furnace time. By using pure manganese you improve the ductility of your steel . . . lower reject levels . . . and simplify furnace and deoxidation practices.

By standardizing on ELECTROMANGANESE®—99.9% pure manganese—you eliminate the unwanted carbon, silicon, and other obnoxious impurities. What you need is what you get . . . all you get! Write for Bulletin 201 and price list to Technical Literature Section, Foote Mineral Company, 438 Eighteen West Chelten Building, Philadelphia 44, Pa. or Box 479, Knoxville 1, Tenn.



7 cent JOKER IN ALUMINUM KILLED STEELS

NEW EQUIPMENT

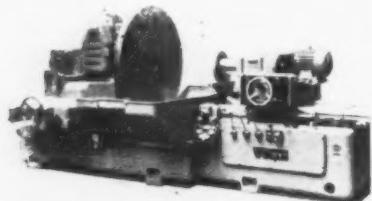
Giant Band Saw

A 40 x 40-in.-capacity horizontal band saw is designed for cutting all types and forms of materials. Hydraulic feed and blade tensioning are featured. A light and a heavy model are available. (W. F. Wells and Sons.)

For more data circle No. 47 on postcard, p. 115

Internal Grinders

The Wotan internal grinder line is now available, including heavy-



duty hydraulic chucks with swings up to 60 in. All four surfaces can be ground in one setting, assuring

perfect concentricity. Bores can be ground true to 20-millionths. Lengthened beds are available for long parts. (Index Industrial Corp.)

For more data circle No. 48 on postcard, p. 115

Standard Holders

Standardizing the 55° diamond-shaped carbide insert has permitted



standardization of all component parts, except shanks, of four styles of holder. Now one anvil-locator, one clamp, one screw, and one insert will fit all four. Precision grinding of insert and locator permits tight holding to prevent chatter

and displacement. (Wesson Co.)
For more data circle No. 49 on postcard, p. 115

Pulldown-Jigger

A pulldown-jigger 19 ft, 10 in. high will turn pieces up to 48-in.



diam and 7 ft high, such as crucibles, retorts, etc., and can easily be adapted to run items of any material or shape. (The Crossley Machine Co.)

For more data circle No. 50 on postcard, p. 115

Welding Process

A semi-automatic welding process for welding mild steels up to 75,000-psi tensile strength uses a flux-cored electrode continuously fed into the puddle, shielded by CO₂ gas from the welding gun. A weld deposit is produced with excellent ductility, even at low temperatures. The equipment, including the welding gun and semi-automatic wire-feed equipment, can be connected to most welding machines of 500-amp ac/dc capacity or larger. (Arcos Corp.)

For more data circle No. 51 on postcard, p. 115

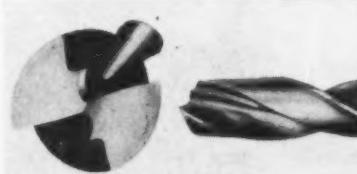
Punches & Dies



GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL STREET · CHICAGO 8, ILLINOIS

Chipbreaker Drill

A patented chipbreaker rib and a web constant over entire flute length make possible high feed rates with long tool life, deep-hole pen-



etration without withdrawal, and free flow of coolant. Sizes from $\frac{1}{4}$ to 4 in. are available at conventional drill prices. Oil-tube, special length,

and other types can be obtained.
(Speedicut Div., Chicago Heights
Steel Co.)

For more data circle No. 52 on postcard, p. 115

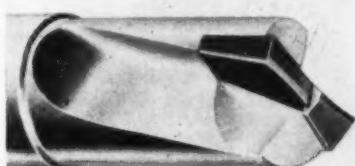
Throwaway Inserts

Ceramic brand VR-97 is now available in triangular, square, and round throwaway inserts for negative-rake toolholders as standard stock items. This material has operated successfully at speeds up to 2000 sfpm, up to $\frac{3}{8}$ -in. cut, at feeds from 0.005 to 0.020 in. (Vascoloy-Ramet Corp.)

For more data circle No. 53 on postcard, p. 115

Two-Flute End Mill

A two-flute carbide-tipped end mill is recommended for all materials, and is especially adaptable to



plunge-cutting and peripheral-milling of aluminum. A "radial hook" gives freer shearing action in plunge cuts. It is available in seven sizes, from $\frac{3}{8}$ to 1 in. (Brown & Sharpe Mfg. Co.)

For more data circle No. 54 on postcard, p. 115

Full-Automatic Forger

A fully automatic forging machine, with integral induction heater, can produce $\frac{5}{8}$ - and $\frac{3}{4}$ -in. bolts from 12 to 72 in. rods at 45 per minute. Rods threaded at one end are fed, heated, passed through a four-position progressive die, and discharged. (The Hill Acme Co.)

For more data circle No. 55 on postcard, p. 115

Plunging Ladles

A series of magnesium-alloy plunging ladles is designed for the newest technique for producing ductile iron. Complete with loose covers, they come in eight capacities from 1000 to 6000 lb. (The Industrial Equipment Co.)

For more data circle No. 56 on postcard, p. 115

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NEW PLANT LOCATION...



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WEST PENN POWER

an operating unit of the WEST PENN ELECTRIC SYSTEM



Area Development Department, West Penn Power Company
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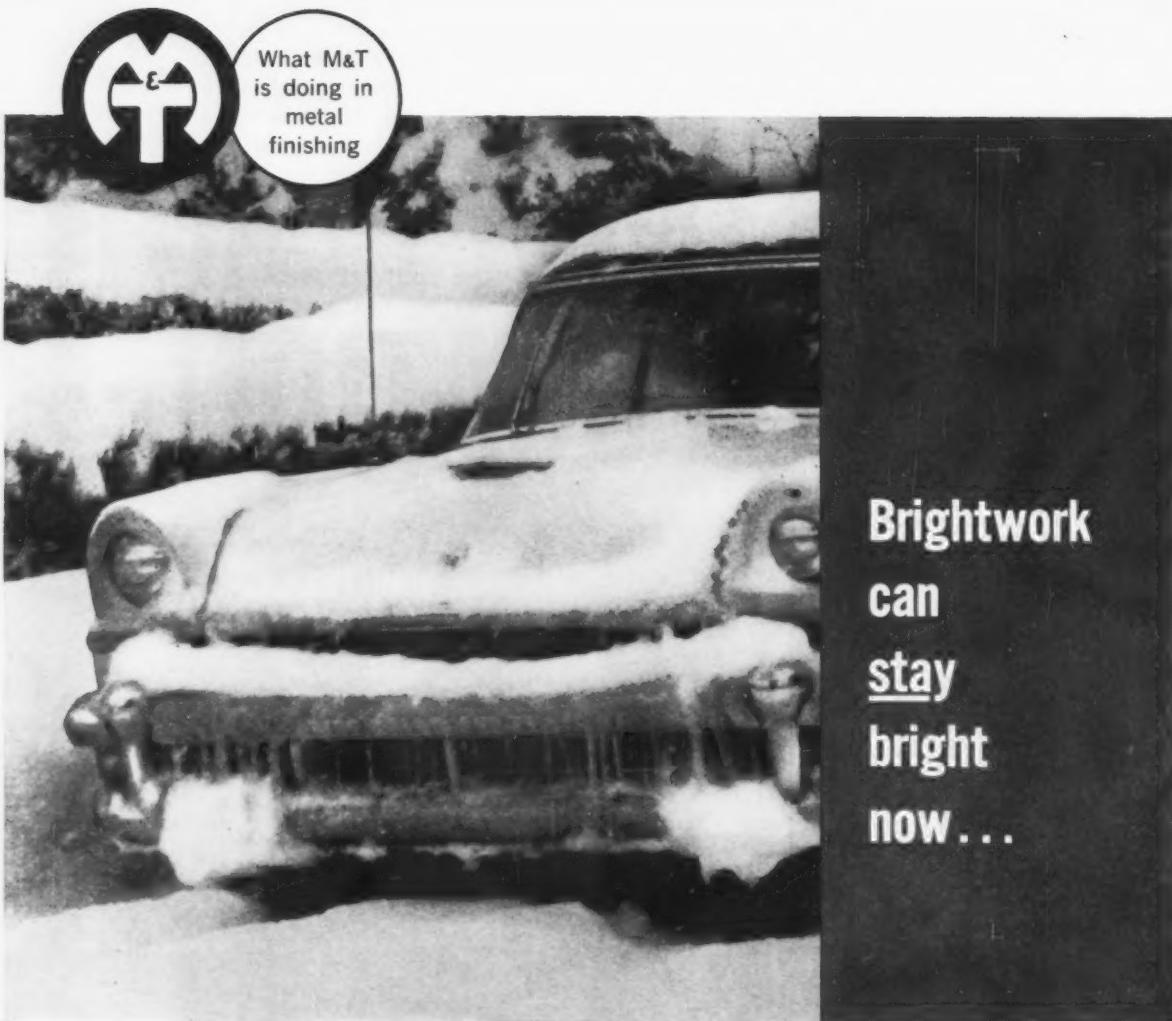
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**Brightwork
can
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now...**

New M&T Chromium Plating Discovery offers most economical way to improve durability

Durability of chromium plated parts in severe, accelerated corrosion tests has been increased up to 500% by the revolutionary Unichrome "Duplex Chromium" Plating Process developed by Metal & Thermit.

Using M&T "Duplex Chromium" to increase the thickness of chromium approximately five times from the usual average of 10 millionths of an inch enables parts to maintain an ASTM durability rating of 8 or better (10 is *perfect*)! This thicker and more uniform chromium plate radically increases survival time in modern accelerated tests by many times over.

M&T "Duplex Chromium" consists of a layer of Unichrome Crack-Free Chromium which blocks infiltration of corrosives to underlying metal. It is followed by another layer of Unichrome SRHS® Chromium to build up proper thickness. The additional millionths of an inch more chromium, in these two layers, do more for outdoor durability than any

other change in present plating procedure. Results show that per dollar invested in equipment and solutions, this new technique gives greater benefits than a corresponding expenditure for thicker copper and nickel undercoats. It saves on capital investment because existing production equipment can be used. It saves by cutting rejects of parts which are now required to survive more rigorous life tests than heretofore.

Simply by adding the few additional minutes to plating time and using M&T "Duplex Chromium", you can add *years* to the life of chromium plated finishes in outdoor exposure. Send for data. Or ask the M&T Man about it.

**METAL & THERMIT
CORPORATION**
GENERAL OFFICES: RAHWAY, NEW JERSEY

The Iron Age Summary

Pact Extension Eases Pressure

Steel mills and their customers are taking advantage of two-week respite.

Mills are cleaning up steel promised for June delivery. But demand still holds up.

■ Steel mills and their customers are making hay during the two-week labor contract extension which expires at midnight July 14.

For the mills, the extension gives them a chance to clean up much of the steel that had been promised for late June delivery. To this extent it is a real help to steel users who were counting on this much-needed tonnage to bolster inventories. Had a strike occurred on June 30, the original deadline, some metal working firms would have been out on a small limb.

Orders Hold Up—The contract extension did not result in significant cancellations or deferments. This probably was due in part to the continuing uncertainty for steel

output as long as the labor dispute remains unsettled. But it also speaks well for the probable strength of the steel market in the third and fourth quarters.

If there is no strike, market analysts expect demand to ease off to the extent of "scare" tonnages now on the steel order books. But the letdown would not be catastrophic.

Here's how one steel man looks at second-half prospects:

If there is no strike: 75 pct operations for six months.

If there is a one-month strike: 90 pct for five months.

If there is a strike of more than one month: 100 pct operations for four months.

In any case, he expects the second half to average out at 75 pct of capacity.

Specialty Mills Hit—The specialty mills already are feeling effects of the first-half inventory buildup. Stainless strip is holding up fairly well but other stainless products and tool steels have fallen flat. The mills

and their customers geared their thinking to a July 1 shutdown. Steel needed was shipped in June. There was little order placement for July.

As a result, two major specialty steel mills have dropped their operations below 50 pct of capacity. Another is planning to shut down completely at the end of this week for a temporary period.

Big Users Still Scared—Users of the tonnage steel products are for the most part not in the same fortunate position of the specialty steel users. Even those who are "comfortably situated" will continue to take in more material until the labor outlook is clarified. It's simply a situation where their business is so good they can't afford to take a chance of running short.

Another extension of the steel labor contract—always a possibility—would ease the pressure. But such an extension is not considered likely. Besides, a peaceful settlement is expected.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week	Last Week	Month Ago	Year Ago
Ingot Index (1947-1949=100)	148.0	138.3	162.1	89.8
Operating Rates				
Chicago	89.0	88.0*	94.0	62.0
Pittsburgh	82.0	75.5*	95.0	48.5
Philadelphia	85.5	79.0*	98.5	53.0
Valley	76.5	71.5*	76.0	33.0
West	80.0	82.5*	93.5	64.5
Cleveland	75.5	54.0*	89.0	37.0
Detroit	83.0	86.0*	98.0	55.0
Buffalo	105.0	105.0	107.0	39.0
South Ohio River	92.0	79.0*	94.0	68.0
South	85.0	82.0*	97.0	50.5
Upper Ohio River	85.0	82.0*	84.5	75.0
St. Louis	93.0	95.0*	80.0	84.0
Aggregate	84.0	78.5	92.0	53.4

*Revised

Prices At a Glance

	This Week	Week Ago	Month Ago	Year Ago
(Cents per lb unless otherwise noted)				
Composite price				
Finished Steel base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	\$66.41	\$66.41	\$66.41	\$66.49
Scrap No. 1 hvy (Gross ton)	\$39.17	\$38.50	\$37.50	\$36.50
No. 2 bundles	\$26.67	\$26.33	\$25.17	\$26.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.10
Copper, electrolytic	31.50	31.50	31.50	25-26.50
Lead, St. Louis	11.80	11.80	11.80	10.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	103.00	103.25*	104.00	94.00
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

Furnace Price Hikes Probable

Industrial furnace makers expect to raise prices if raw material costs for items like steel go up.

They also predict longer delivery schedules for rest of '59 as backlog increase.

■ Buyers thinking of purchasing industrial furnaces would be wise to act now.

During the rest of 1959 they can expect: Extended delivery schedules as manufacturers' backlog stretch out. And the prospect of higher prices.

By early fall, says the Industrial Heating Equipment Assn., the backlog of most member companies will

extend into the first months of 1960.

Backlogs Building — Furnace makers surveyed by The IRON AGE support this belief. Almost all report their backlog are well above 1958 levels. About half say deliveries are already extended.

"Our backlog in all divisions are higher than they have been for some time," says one furnace manufacturer.

As yet, lengthening deliveries are generally limited to specialized equipment. "We are extended on jobs requiring a high proportion of engineering," one company says. "Fortunately there is a better percentage of standard or near-standard units on order."

Delivery Timetable—Here are

some average delivery schedules as listed by the furnace suppliers: Standard furnaces—6 to 12 weeks. Some standard units can be shipped from stock; Car bottom furnaces—10 to 12 weeks; aluminum annealing furnaces—10 to 12 weeks; special heat treat furnaces—12 weeks; large heat treat furnaces—20 to 30 weeks; and steel mill furnaces—30 to 50 weeks.

Pricing Opinions—Most furnace makers believe price increases are probable, especially if raw material costs for items like steel go up.

These are some of their comments on the price outlook:

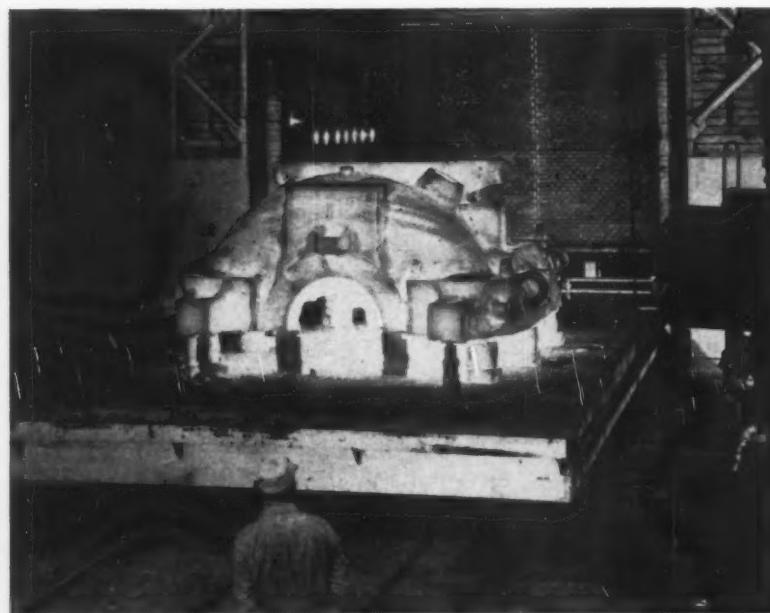
"We expect prices to go up somewhat if there's a steel strike and probably only slightly if there's no strike."

"Prices seem to be on the march again. However, we'll reserve judgment until after the steel settlement. Price adjustments to date have been on scattered control components and do not represent an extensive price increase."

"We look for an increase of 4 to 5 pct in furnace prices."

Sales Optimism—The manufacturers are optimistic about the sales outlook for the balance of the year. According to those surveyed sales are well above 1958's dull levels. And the majority of equipment makers expect 1959 sales to top those of 1958 by a substantial margin.

Much new business is expected from the steel, aircraft, and automotive industries. Export should be a continuing good source of orders. And more buyers are expected to replace obsolete heating equipment as capital spending steps up.



HARDER AND TOUGHER: Thirty-five ton turbine shell casting is heated to 1925°F and held there for 10 hours in this Gradiation-fired car-bottom furnace. Gradiation heating is credited by the furnace maker—Selas Corp. of America—with reducing time cycles for operation by 20 pct through faster heat-up and better control.

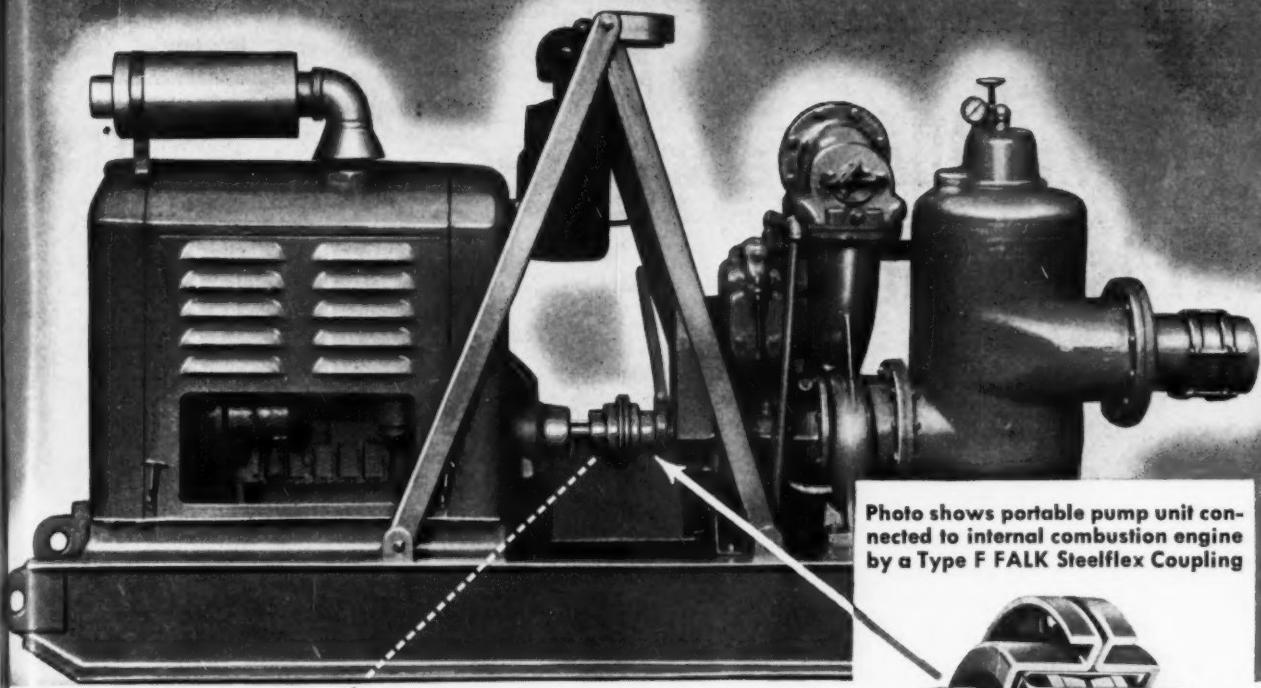
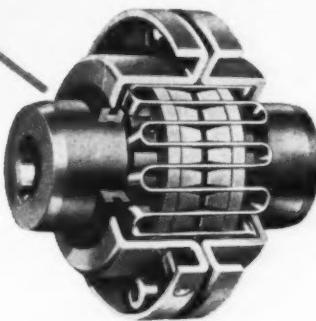


Photo shows portable pump unit connected to internal combustion engine by a Type F FALK Steelflex Coupling



How FALK STEELFLEX Couplings give your connected machinery Double Protection

FIRST: They protect against shaft misalignment. Some degree of shaft misalignment is unavoidable—and unless protective compensation is provided, additional loads are developed on shafts, bearings and other revolving elements. The result is excessive wear-and-tear—and often actual breakage....FALK Steelflex Couplings compensate for either angular or parallel misalignment—or for the more serious condition involving both! The exclusive Steelflex gridmember which joins the two hubs is not fastened to either hub; thus, either hub can shift in any direction without imposing a load on the other hub.

Yet, important as protection against shaft misalignment is to you, it is only one function of the truly flexible FALK Steelflex Coupling.

SECOND: They protect against torque fluctuations which create excess wear on connected machines and frequently induce destructive shaft misalignment. The exclusive FALK Steelflex grid-groove design cushions shock loads, dampens vibration, reduces impact loads as much as 30 per cent. You get this extra margin of protection that can mean the difference between operating and breakdown! You save on maintenance costs. And—you prolong the service life of your machines!...For complete information, ask your FALK Representative or Authorized Distributor. Or—write direct for Bulletin 4100.

FALK and STEELFLEX are Registered Trademarks

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

**Basic Type F
FALK STEELFLEX COUPLING
fills the needs of 90%
of industrial applications**

This cutaway view shows the exclusive Steelflex design which provides torsional resilience with the strength of steel. This torsional resilience spreads peak or shock loads over a relatively long increment of time, thus greatly reducing stresses in connected machinery.

The versatile Type F Steelflex can be used horizontally or vertically, without modification or special parts. It is ideally suited to 9 out of 10 applications. For unusual applications involving overload conditions, extended shafts, brakes, etc., standard designs of dual-purpose Steelflex couplings are available.

For most applications, you can give your machines the extra protection afforded by FALK Steelflex Couplings at no extra cost!

FALK
...a good name in industry

How Mills View This Quarter

Barring a long steel strike many mills will stay busy all through the summer.

How busy depends on the products they produce. Here's a rundown on the situation, product by product.

- How busy steel mills will be this quarter depends on the products they produce.

Third quarter prospects for some products are good. For others they are only fair. The outlook seems brightest for sheet and plate mills.

Most sheet mills are booked solidly through July and August. In addition, many are still struggling to clean up June carryovers. Some mills won't accept September bookings so they can catch up on backlog. Others went light on July orders for the same reason.

Plate bookings are strong. And there's pressure from customers in the Midwest for increased allotments from the mills. Eastern mills are optimistic about third quarter sales, although a few still have openings in August schedules.

Structurals are in about the same status as plate. Bookings of wide flange beams are good, with standard shapes only a little behind. Bar mills say new orders are coming in—but at a reduced rate.

Pipemakers are not encouraged about the weeks ahead. Some mills are still only half filled for July on oil country seamless and standard pipe. Large linepipe, however, looks strong for the rest of the year.

Many wire mills will shut down for their usual vacation periods this month or next.

Sheet and Strip—Mills are cleaning up June carryovers during the two-week labor contract extension. Some mills don't expect to ship much July tonnage in that period. Others deliberately went easy on July orders so they could stay on top of bookings. There's concern among sheet mills that some third quarter bookings may be only "position orders" entered by customers just to get on the books. If there's no strike, the mills worry, these may be cancelled. But with current sheet backlog this isn't too much of a problem.

Bar—Producers report few customers cancelled or deferred tonnage as June slipped into July. Many mills are taking advantage of the two-week breather to clean up June carryovers. **Midwest** service centers have short inventories on some sizes of hot-rolled, cold-finished, and alloy bar.

Pipe and Tubing—New orders showed a slight improvement after a possible steel strike deadline was pushed back. But the gains were not

PURCHASING AGENTS' CHECKLIST

Home and roadbuilding outlays are pacing the construction upturn. And further gains are expected as industrial building increases. P. 60

New centerless grinder has three major advances, claims Norton Co., the maker. P. 77

Eddy current method of non-destructive testing is good news for tubing buyers. P. 89

significant. **Pittsburgh** mills still have holes in July rollings of oil country goods and standard pipe. Some are using the slack period to bolster their own pipe inventories. Large linepipe product looks strong for the balance of '59.

Wire—August bookings are arriving at **Midwest** mills in excellent volume. Producers there will shut down mills for vacation periods this month. But one large supplier then looks for a strong order rate during the balance of 1959.

Currently paving mesh and building mesh are selling well in the **Chicago** area. Wire demand from the cold heading and home product markets is exceeding forecasts. Demand is also good from welding rod producers.

Mills are also encouraged because customer inventories are apparently not large. One wiremaker estimates most of his customers have supplies enough for 60 days or less.

Stainless—Armco Steel Corp. has discontinued production of Type 410 and Type 430 chromium stainless steel sheets and plates at its Middletown Works. Production of these two types of steel in sheets and strip will be concentrated in Armco's Butler, Pa., Works, the company says. Capacity for flat rolled stainless production is being doubled at the Butler plant. Armco will no longer make Type 410 and Type 430 plates at any of its facilities.

Service Centers—Assuming there's no steel strike, distributors expect the normal seasonal drop in business this month. So far, however, sales have held up well, especially in the **Midwest**. Customers there are still buying structural, bar, and plate in heavy volume. Warehouses report they have some spot shortages in almost all steel products.

Ferrosilicon—Keokuk, Iowa, is now a basing point for shipments of 50 pct ferrosilicon, Keokuk Electro-Metals Co., a division of Vanadium Corp of America, announces.

COMPARISON OF PRICES

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

July 7 June 30 June 9 July 8
1959 1959 1959 1958

Flat-Rolled Steel: (per pound)

	Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	5.275	6.275	6.275	6.05	
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60	
Hot-rolled strip	5.10	5.10	5.10	4.925	
Cold-rolled strip	7.425	7.425	7.425	7.17	
Plate	5.30	5.30	5.30	5.12	
Plates, wrought iron	18.55	13.55	13.55	13.15	
Stain's C-R strip (No. 302)	52.00	52.00	52.00	52.00	

Tin and Terneplate: (per base box)

	Tinplate (1.50 lb.) cokes	\$10.65	\$10.65	\$10.65	\$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00	
Special coated mfg. terne	9.90	9.90	9.90	9.55	

Bars and Shapes: (per pound)

	Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30	
Alloy bars	6.725	6.725	6.725	6.475	
Structural shapes	5.50	5.50	5.50	5.275	
Stainless bars (No. 302)	46.75	46.75	46.75	45.00	
Wrought iron bars	14.90	14.90	14.90	14.45	

Wire: (per pound)

	Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)					

	Heavy rails	\$5.75	\$5.75	\$5.75	\$5.525
Light rails		6.725	6.725	6.50	

Semifinished Steel: (per net ton)

	Rerolling billets	\$80.00	\$80.00	\$80.00	\$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50	
Forging billets	99.50	99.50	99.50	96.00	
Alloys blooms, billets, slabs	119.00	119.00	119.00	114.00	

Wire Rods and Skelp: (per pound)

	Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp		5.05	6.05	5.05	4.875

Finished Steel Composite: (per pound)

	Base price	6.196¢	6.196¢	6.196¢	5.967¢
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Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

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COMPARISON OF PRICES

(Effective July 7, 1959)

July 7 1959	June 30 1959	June 9 1959	July 8 1958
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Pig Iron: (per gross ton)	\$70.57	\$70.57	\$70.57
Foundry, del'd Phila.	\$70.57	\$73.87	\$73.87
Foundry, Southern Cin'ti	\$73.87	\$73.87	\$73.87
Foundry, Birmingham	\$62.50	\$62.50	\$62.50
Foundry, Chicago	\$66.50	\$66.50	\$66.50
Basic, del'd Philadelphia	\$70.07	\$70.07	\$70.47
Basic, Valley furnace	\$66.00	\$66.00	\$66.00
Malleable, Chicago	\$66.50	\$66.50	\$66.50
Malleable, Valley	\$66.50	\$66.50	\$66.50
Ferromanganese, 74-76 pct Mn, cents per lb:	12.25	12.25	12.25

Pig Iron Composite: (per gross ton)	\$86.41	\$86.41	\$86.41
Pig iron	\$86.41	\$86.41	\$86.41

Scrap: (per gross ton)	\$43.50	\$43.50	\$42.50	\$38.50
No. 1 steel, Pittsburgh	\$43.50	\$37.50	\$35.50	\$33.50
No. 1 steel, Phila. area	\$37.50	\$34.50	\$34.50	\$37.50
No. 1 steel, Chicago	\$36.50	\$36.50	\$35.50	\$31.50
No. 1 bundles, Detroit	\$37.50	\$36.50	\$35.50	\$31.50
Low phos., Youngstown	\$44.50	\$43.50	\$41.50	\$39.50
No. 1 mach'y cast, Pittsburgh	\$51.50	\$51.50	\$49.50	\$48.50
No. 1 mach'y cast, Phila.	\$49.50	\$49.50	\$49.50	\$47.50
No. 1 mach'y cast, Chicago	\$59.50	\$58.50	\$57.50	\$46.50

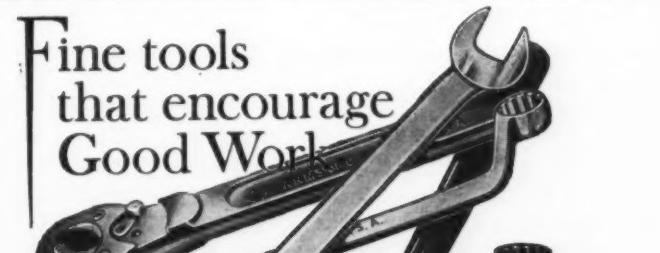
Steel Scrap Composite: (per gross ton)	\$39.17	\$38.50	\$37.50	\$36.50
No. 1 hvy. melting scrap	\$39.17	\$26.67	\$26.33	\$25.17
No. 2 bundles				

Nonferrous Metals: (cents per pound to large buyers)	31.50	31.50	31.50	25-26.50
Copper, electrolytic, Conn.	31.50	31.50	31.50	25.00
Copper, Lake, Conn.	31.50	31.50	31.50	25.00
Tin, Straits, N. Y.	103.00†	103.25*	104.00	94.00
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.80	11.80	11.80	10.80
Aluminum, virgin ingot	26.80	26.80	26.80	26.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. * Average. * Revised.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.



ARMSTRONG WRENCHES

An ARMSTRONG Wrench feels right—is balanced. It goes over nuts or screw heads easily, grips firmly without sloppiness, won't round corners—because openings are carefully machined to correct sizes. It's safe, strong beyond need without clumsy bulk—because of superior design and selected steels, heat treated to proper degree of hardness and tensile strength. It's quality finished, ARMALOY (alloy steel) Wrenches in chrome plate with heads buffed; HI-TEN

ARMSTRONG BROS. TOOL CO. 5209 W. Armstrong Ave. Chicago 46, U.S.A.




Last Minute Rush Boosts Prices

Midwestern mills are particularly anxious to get in all the scrap they can.

Prices in other areas are strong. Export contributes to price pressure.

■ Approach of extended steel contract deadline finds the scrap market stronger than it was two weeks ago.

A new round of mill buying in the Midwest sent prices of primary openhearth scrap up \$2.50 in Cleveland, \$2 in Chicago and Cincinnati, and \$1 in Detroit. Prices in many other districts are straining toward higher levels.

Generally, the mills which would be affected by a strike have extended their scrap delivery deadlines from six to 10 days. In the last minute rush, they've had to pay higher prices to get material fast.

In some cases, mills have called off their deadlines and ordered dealers to store scrap in their yards until the strike crisis is over.

Meanwhile, export buying continues to exert price pressures in the port districts.

Higher prices paid in Chicago sent The IRON AGE No. 1 heavy melting Composite Price up 67¢ to \$39.17.

Pittsburgh — Prices of most grades are unchanged as the approach of the new contract deadline has again brought an end to trading. Early railroad lists showed prices holding firm or advancing slightly. A mill on the fringe of the district bought No. 1 heavy melting at a price that was \$4 over its

figure for last month but still well under the amount needed for any real tonnage. The feeling among brokers is that an early steel settlement will see dealer grades moving up and industrial scrap holding at current levels.

Chicago — Mills again began cutting shipments as the two-week labor contract extension draws to a close. Nonetheless, attempts by mills to buy small tonnages at existing prices met with strong resistance. The market continued to climb on the basis of new sales. Evidence that some scrap is being purchased for storage and later sale continues to mount.

Philadelphia — The market is firm but quiet. Prices are unchanged. A dock strike has tied up export shipments for the time being.

New York — Solid if unspectacular export shipments plus small domestic sales have strengthened prices here. Some slight strength in No. 2 bundles is offset by a slight weakness in No. 2 steel. Prices, so far, are unchanged. Stainless appears to be strongest of all, with two major consumers buying at going prices.

Detroit — Ten-day orders from local mills have given strength to the market. Some brokers are also offering to buy No. 1 bundles for shipment to the docks for the same price as they offered for mill delivery. But an undercurrent of strong demand has turned dealers into reluctant sellers.

Cleveland — Market is up \$2 as the few local and Valley buyers find

prime dealer scrap hard to come by. A local mill is paying up to \$43 for special lots from restricted yards. A 2 ft foundry steel buyer is paying up to \$3 springboard to fill an order. Valley electric mills have gone to \$45 for low phos plate. Latest auto lists hit \$43.50 on track.

St. Louis — A stronger undertone exists in the market. No. 2 bundles and rerolling rails edged up \$1. Dealer supplies are heavy. Overall activity is light.

Birmingham — The market is extremely active. Mills buying for immediate shipment only have paid \$36 for No. 1 heavy melting, a \$2.50 increase over the previous price. Prime bundles and electric furnace grades are up \$2. Some railroad items are higher and cast grades are strong. Pipe mills are going out of the district for cast scrap.

Cincinnati — Market is up \$2 on new prices from local mills but dealers are still holding down tonnage they will ship. One mill is accepting prime grades through the month and will store in dealer yards in case of a strike. A barge line strike has cut off upriver shipments.

Buffalo — There is no weakening of the market although first-of-the-month sales have not materialized. Some small sales of low phos have been made to foundries at quoted prices. All shipments on old orders were halted July 6.

Boston — Prices are unchanged. But uncertainty of the steel strike is undermining confidence.

West Coast — Prices are firm. There is still some export activity but domestic business is at a standstill. No. 1 cupola cast is strong.

Houston — Small amounts of scrap are moving but it's still a "wait and see" market. New export activity is expected. Prices are unchanged.

Scrap Dealers! Here's why it will cost you less money to handle scrap with the LOAD LUGGER system . . .



A single Load Lugger equipped truck does the work of several ordinary trucks and trailers.



Only one man, the truck driver, is needed.



Only one truck to maintain instead of several.*



Only one set of license plates to buy.*

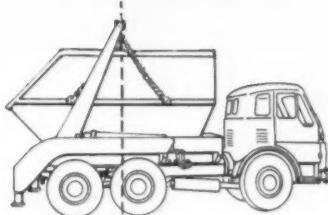


Only one set of tires to repair or replace.



Only one rig to insure.*

*No maintenance, license plates or insurance are needed for Load Lugger containers.



Safer handling, easier driving. Weight of load is distributed more evenly over front and rear of truck —center of gravity of load is ahead of rear axle.

ALL THESE, plus more efficient service which results in better customer relations, make Load Lugger first choice of progressive, cost-conscious scrap dealers.

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ASK ABOUT OUR
LEASING AND
FINANCING PLANS

SCRAP PRICES (Effective July 7, 1959)

Pittsburgh

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	45.00 to 49.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	47.00 to 48.00
Heavy turnings	35.00 to 36.00
No. 1 RR hvy. melting	44.00 to 45.00
Scrap rails, random lgth.	51.00 to 52.00
Rails 2 ft and under	56.00 to 57.00
RR specialties	51.00 to 52.00
No. 1 machinery cast	51.00 to 52.00
Cupola cast	45.00 to 46.00
Heavy breakable cast	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	\$36.00 to \$37.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	37.00 to 38.00
No. 1 factory bundles	42.00 to 43.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	29.00 to 30.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. forge crops	50.00 to 51.00
Low phos. punch'gs plate,	
1/4 in. and heavier	47.00 to 48.00
Low phos. 2 ft and under	45.00 to 46.00
No. 1 RR hvy. melting	40.00 to 41.00
Scrap rails, random lgth.	50.00 to 51.00
Rerolling rails	60.00 to 61.00
Rails 2 ft and under	55.00 to 56.00
Angles and splice bars	51.00 to 52.00
RR steel car axles	55.00 to 66.00
RR couplers and knuckles	49.00 to 50.00
No. 1 machinery cast	59.00 to 60.00
Cupola cast	52.00 to 53.00
Cast iron wheels	44.00 to 45.00
Malleable	60.00 to 61.00
Stove plate	50.00 to 51.00
Steel car wheels	49.00 to 50.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
410 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	38.00 to 39.00
No. 2 bundles	24.00 to 28.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	27.00 to 28.00
Low phos. 5 ft and under	39.00 to 40.00
Low phos. 2 ft punch'gs	41.00 to 42.00
Elec. furnace bundles	39.00 to 40.00
Heavy turnings	33.00 to 34.00
RR specialties	43.00 to 44.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast	40.00 to 41.00
Heavy breakable cast	42.00 to 43.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$35.50 to \$36.50
No. 2 hvy. melting	30.50 to 31.50
No. 1 dealer bundles	35.50 to 36.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	44.00 to 45.00
Rails, random length	47.00 to 48.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast	45.00 to 46.00
Hvy. breakable cast	41.00 to 42.00
Drop Broken cast	51.00 to 52.00

Youngstown

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	29.50 to 30.50
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	28.50 to 29.50
Machine shop turn.	18.50 to 19.50
Shoveling turnings	23.50 to 24.50
Low phos. plate	44.00 to 45.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$39.50 to \$40.50
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	39.50 to 40.50
No. 1 factory bundles	45.00 to 46.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	39.50 to 40.50
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Cut structural & plates, 2 ft & under	45.00 to 46.00
Drop forge flashings	39.50 to 40.50
Low phos. punch'gs plate	40.50 to 41.50
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	43.00 to 44.00
Rails 2 ft and under	57.00 to 58.00
Rails 18 in. and under	58.00 to 59.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	56.00 to 57.00
No. 1 machinery cast	34.00 to 35.00
Stove plate	51.00 to 52.00
Malleable	67.00 to 68.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	120.00 to 125.00

Buffalo

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structural and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast	48.00 to 49.00
No. 1 cupola cast	44.00 to 45.00

St. Louis

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	13.00 to 14.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	18.00 to 19.00
No. 1 RR hvy. melting	39.00 to 40.00
Rails, random lengths	44.00 to 45.00
Rails, 18 in. and under	50.00 to 51.00
Angles and splice bars	44.00 to 45.00
RR specialties	44.00 to 45.00
Cupola cast	50.00 to 51.00
Heavy breakable cast	40.00 to 41.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	55.00 to 56.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 special bundles	38.00 to 39.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	38.00 to 39.00
Elec. furnace, 3 ft & under	36.00 to 37.00
Bar crops and plate	44.00 to 45.00
Structural and plate, 2 ft & under	43.00 to 44.00
No. 1 RR hvy. melting	37.00 to 38.00
Scrap rails, random lgth.	42.00 to 43.00
Rails, 18 in. and under	48.00 to 49.00
Angles and splice bars	43.00 to 44.00
Rerolling rails	54.00 to 55.00
No. 1 cupola cast	55.00 to 56.00
Stove plate	55.00 to 56.00
Cast iron car wheels	41.00 to 42.00
Unstripped motor blocks	42.00 to 43.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$29.00 to \$30.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	18.00 to 19.00
Machine shop turnings	9.00 to 10.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast	37.00 to 38.00
Mixed yard cast	35.00 to 36.00
Heavy breakable cast	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	37.00 to 38.00
No. 1 busheling	27.00 to 28.00
Machine shop turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	16.00 to 17.00
No. 1 machinery cast	35.00 to 36.00
Mixed cupola cast	33.00 to 34.00
Heavy breakable cast	31.00 to 32.00
Stove plate	29.00 to 30.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$27.00 to \$28.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	27.00 to 28.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	27.00 to 28.00
Machine shop turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	16.00 to 17.00
No. 1 machinery cast	35.00 to 36.00
Mixed cupola cast	33.00 to 34.00
Heavy breakable cast	31.00 to 32.00
Stove plate	29.00 to 30.00

San Francisco

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
No. 1 busheling	17.00
Machine shop turn.	17.00
Shoveling turnings	17.00
Clean cast. chem. borings	17.00
No. 1 machinery cast	36.00
Mixed cupola cast	34.00
Heavy breakable cast	32.00
Stove plate	29.00 to 30.00

Los Angeles

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$38.00 to \$40.00
No. 2 hvy. melting	36.00 to 38.00
No. 1 dealer bundles	35.00
No. 2 bundles	18.00 to 20.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Elec. furn. 1 ft and under	49.00
No. 1 cupola cast	45.00

Seattle

<tr

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NONFERROUS MARKETS

Ponder Action On Lead-Zinc Imports

Interior Secretary Seaton says he may tighten up the system of quotas on lead-zinc imports.

Any move in this direction could upset the plan foreign producers had evolved for making the most of the U. S. market.

■ The Administration is pondering the possibility of tightening up lead and zinc import quotas.

Interior Secretary Fred A. Seaton has indicated strongly that his department may reduce the present quotas and extend the system to cover "loophole lead and zinc"—finished products.

Any action by the Administration in this direction may doom the technique by which foreign nonferrous metal producers and fabricators hoped to get the most from the U. S. market.

Their approach is cooperation—to a point.

Block That Law—The main fear of foreign producers is legislation or executive action. They feel that once you get something on the books in the U. S. it is time consuming, to say the least, to erase it.

Foreign producers figure on shipping in volume to the U. S. until Congress or the President starts to bar the door. Then they make splashy voluntary cutbacks that make official action unnecessary. The chief value of a voluntary cutback over an official one: It can be dismissed quickly and easily, and carries no penalty for violation.

Lead and zinc imports are off 20

pet this year, due mostly to the quotas. Yet prices are still low. When the United Nations conference on world lead and zinc problems convened in April, most foreign countries saw the handwriting on the wall and made a big to-do about their plans to cut back production in the interests of stability.

Cutbacks—U. S. Miners say quotas must be made restrictive enough to bring the prices of both lead and zinc up.

R. L. McCann, president of New Jersey Zinc Co., told a House Mining subcommittee investigating mining industry problems that the minimum price for zinc to support a strong U. S. industry is 13½¢ per lb. The current price is 11¢.

For lead, Andrew Fletcher, president of St. Joseph Lead Co., says 15½¢ per lb is needed. Now lead costs 12¢.

Western Bloc—The bloc of Western Congressmen, as usual, has taken its cue from the miners and is pushing to support the U. S. lead and zinc industry at these prices with a 4¢ tax on imports whenever prices drop lower. They figure U. S. output should be 350,000 tons of lead, and 550,000 tons of zinc annually.

Also important, but getting less attention: The U. S. lead and zinc miners want an expanded federally-supported research program aimed at new uses, markets.

Copper

The bill for your sheet and strip will look different next month. Re-

vere Copper and Brass Co. announced that, based on a long range cost analysis of its manufacturing procedure, it is changing its pricing methods starting Aug. 15.

Apparently other mills have been considering something similar, and the entire industry is expected to go along.

All copper and brass strip and roll schedules will include widths to 24 in. Wider widths will be priced on dimension sheet schedules.

Extras for wide widths are sharply lower to reflect manufacturing advances.

Tin prices for the week: July 1—103.00; July 2—102.875; July 3—102.875; July 6—103.00; July 7—103.00.*

*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in APRIL based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd	
Conn. Valley	31.50
Copper, Lake	31.50
Straits Tin, New York	103.84
Zinc, E. St. Louis	11.00
Lead, St. Louis	11.80
Aluminum ingot	26.80

Note: Quotations are on going prices

Note: Tin price was unchanged for two weeks because there were no sales of spot tin.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum Ingot	26.00	26.10	8/1/58
Copper (E)	31.00	30.00	3/9/58
Copper (CS)	30.00	30.50	6/29/58
Copper (L)	31.50	30.00	3/9/58
Lead, St. L.	11.80	11.30	5/7/58
Lead, N. Y.	12.00	11.80	5/7/58
Magnesium Ingot	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	162-162	185-205	11/3/58
Zinc, E. St. L.	11.00	11.50	2/25/58
Zinc, N. Y.	11.80	12.00	2/25/58

ALUMINUM: 99% Ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; Other primary prices, pg. 134.



Lima Type 24-T Jobmaster Truck Crane handling scrap in yard of Buckeye Foundry, Cincinnati, Ohio. The versatile crane is equipped with a 28-ft. boom and employs a hook, $\frac{1}{2}$ -yd. clamshell, or 3000-lb. magnet, depending on the job.

"LIMA Jobmaster saves 20 man-hours on just one car-unloading operation"

reports Buckeye Foundry, Cincinnati, Ohio

Buckeye Foundry, manufacturer of castings for the machine tool industry, bought a Lima Type 24-T Jobmaster Truck Crane in mid-1957 to speed up materials handling.

Al Huth, plant maintenance engineer, says: "We use the crane for handling pig iron, sand, scrap and flasks, and it has proved to be a very profitable investment. Formerly the materials-handling jobs were done by a crew of 18 men, and it was a lot of hard, brutal work 8 hours a day. Now the crane works only 7 hours a day, and our work force has been reduced to four men. The crane can unload 300 tons of pig iron a day, or 60 to

65 truckloads of sand. It used to take three men 8 hours to unload a carload of sand. With the Lima, it now takes two men 2 hours to do the same job. Unloading a carload of pig iron previously meant two men for 8 hours. With the Lima, it now takes only two men 1 hour."

If you have a materials-handling problem, it will pay you to check the complete line of wagon, truck and crawler-mounted Limas . . . designed and built with the quality that saves you time and money on every job. See your nearby distributor or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

C "F" temper except 6061-0)

Alloy	.032	.081	.136	.250-
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	14	36-56	34-1	114-134
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type→	Gage→	.250	.250-	.188	.081	.032
AZ31B Stand, Grade		3.00	2.00	.188	.081	.032
AZ31B Spec.		67.9	69.0	77.9	103.1	
Tread Plate		93.3	95.7	108.7	171.3	
Tooling Plate		70.6	71.7			
	73.0					

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

"A" Nickel Monel	Inconel
Sheet, CR	128
Strip, CR	124
Rod, bar, HR	107
Angles, HR	107
Plates, HR	130
Seamless tube	157
Shot, blocks	87

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	55.63		52.86	55.82
Brass, Yellow	48.24	48.75	48.18	51.05
Brass, Low	51.23	51.77	51.17	54.54
Brass, R.L.	52.29	52.83	52.23	55.60
Brass, Naval	52.80		46.61	56.21
Muntz Metal	50.85		46.16	
Comm. Bz.	53.90	54.44	53.84	56.96
Mang. Bz.	56.54		50.14	
Phos. Br. 5%	75.34		75.84	

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$7.25-\$8.50; alloy, \$13.40-\$17.00; Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00. Wire, rolled and/or drawn, commercially pure, \$5.75-\$6.25; alloy, \$7.75-\$10.00; Bar, HR or forged, commercially pure, \$4.25-\$5.00; alloy, \$4.25-\$7.50; billets, HR, commercially pure, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex., 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be, \$74.75
Beryllium copper, per lb conta'd Be, \$43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading, \$71.50

Bismuth, ton lots \$2.25
Cadmium, del'd \$1.30
Calcium, 99.9% small lots \$4.45
Chromium, 99.8% metallic basis \$1.31
Cobalt, 97-99% (per lb) \$1.75 to \$1.82
Germanium, per gm, f.o.b. Miami, Okla., refined \$3.30 to \$4.00
Gold, U. S. Treas., per troy oz. \$35.00
Indium, 99.9%, dollars per troy oz. \$2.25
Iridium, dollars per troy oz. \$75 to \$85
Lithium, 98% \$11.00 to \$14.00
Magnesium sticks, 100 to 500 lb. 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York \$238 to \$240
Nickel oxide sinter at Buffalo, N. Y., other or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz. \$18 to \$20
Platinum, dollars per troy oz. \$77 to \$80
Rhodium \$120.00 to \$125.00
Silver ingots (c per troy oz.) \$1.375
Thorium, per kg. \$43.00
Vanadium \$3.45
Zirconium sponge \$5.00

REMOVED METALS

Brass Ingot

(Cents per lb delivered, carloads)

55-55 ingot	
No. 115	30.25
No. 120	29.00
No. 123	28.00
80-10-10 ingot	
No. 305	34.50
No. 315	32.50
88-10-2 ingot	
No. 210	43.50
No. 215	39.25
No. 245	35.00
Yellow ingot	
No. 405	24.75
Manganese bronze	
No. 421	27.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 25.00-25.25
0.60 copper max. 24.75-25.00
Piston alloys (No. 122 type) 26.75-27.75
No. 12 alum. (No. 2 grade) 23.50-24.00
108 alloy 24.00-24.50
195 alloy 26.50-27.50
13 alloy (0.60 copper max.) 24.75-25.00
AXS-679 (1 pct zinc) 23.75-24.75

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97 1/2% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

Heavy	Turnings
27 1/2	26 1/2
20%	18 1/2
24 1/4	23 1/2
25 1/4	24 1/2
19 1/2	18 1/2
Free cutting rod ends.	20 1/2

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	25 1/2
No. 2 copper wire	24
Light copper	21 1/2
No. 1 composition	20 1/2
No. 1 comp. turnings	19 1/2
Hvy. yellow brass solids	14 1/2
Brass pipe	15 1/2
Radiators	16

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

Mixed old cast.	13 1/2-14 1/2
Mixed new clips	16-17
Mixed turnings, dry	14-15
Dealers' Scrap	
(Dealers' buying price f.o.b. New York in cents per pound)	

Copper and Brass

No. 1 copper wire 23-23 1/2

No. 2 copper wire 21-21 1/2

Light copper 19-19 1/2

Auto radiators (unsweated) 13 1/2-14

No. 1 composition 17 1/2-18 1/2

No. 1 composition turnings 16 1/2-16 1/2

Cocks and faucets 13 3/4-14 1/4

Clean heavy yellow brass 12 1/4-12 1/2

Brass pipe 14-14 1/2

New soft brass clippings 14 3/4-15 1/4

No. 1 brass rod turnings 12-12 1/2

Aluminum

No. 1 copper wire 7-7 1/2

Aluminum crankcase 10 3/4-11 1/2

1100 (2s) aluminum clippings 14 1/2-15

Old sheet and utensils 10 3/4-11 1/2

Borings and turnings 6 1/2-7

Industrial castings 10 3/4-11 1/2

2020 (24s) clippings 12-12 1/2

Zinc

New zinc clippings 4 3/4-5 1/4

Old zinc 3 1/4-3 1/2

Zinc routings 2-2 1/2

Old die cast scrap 1 3/4-2

Nickel and Monel

Pure nickel clippings 52-54

Clean nickel turnings 37-40

Nickel anodes 52-54

Nickel rod ends 52-54

New Monel clippings 30-32

Clean Monel turnings 30-32

Old sheet Monel 26-28

Nickel silver clippings, mixed 18

Nickel silver turnings, mixed 15

Lead

Soft scrap lead 7-7 1/2

Battery plates (dry) 2-2 1/2

Batteries, acid free 1 7/8-2 1/8

Miscellaneous

Block tin 77-78

No. 1 pewter 59-60

Auto babbitt 40-41

Mixer common babbitt 9 1/2-10

Solder joints 13 1/4-13 3/4

Siphon tops 42

Small foundry type 9 1/2-10

Monotype 9 1/2-10

Lino. and stereotype 8 1/2-9

Electrotype 7-7 1/2

Hand picked type shells 5 1/4-5 3/4

Lino. and stereo. dross 2 1/4-2 3/4

Electro dross 2 1/4-2 3/4

(Effective July 6, 1959)

IRON AGE STEEL PRICES		<i>Italics</i> identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.													
		BILLETS, BLOOMS, SLABS			PIL- ING		SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled	
EAST	Bethlehem, Pa.			\$119.00 <i>B3</i>		5.55 <i>B3</i>	8.10 <i>B3</i>	5.55 <i>B5</i>							
	Buffalo, N. Y.	\$80.00 <i>R3</i> , <i>B3</i>	\$99.50 <i>R3</i> , <i>B3</i>	\$119.00 <i>R3</i> , <i>B3</i>	6.50 <i>B3</i>	5.55 <i>B3</i>	8.10 <i>B3</i>	5.55 <i>B3</i>	5.10 <i>B3</i> , <i>R3</i>	7.425 <i>S10</i> , <i>R7</i>	7.575 <i>B3</i>				
	Phila., Pa.									7.875 <i>P15</i>					
	Harrison, N. J.													15.55 <i>C11</i>	
	Conshohocken, Pa.		\$104.50 <i>A2</i>	\$126.00 <i>A2</i>					5.15 <i>A2</i>		7.575 <i>A2</i>				
	New Bedford, Mass.									7.875 <i>R6</i>					
	Johnstown, Pa.	\$80.00 <i>B3</i>	\$99.50 <i>B3</i>	\$119.00 <i>B3</i>		5.55 <i>B3</i>	8.10 <i>B3</i>								
	Boston, Mass.									7.975 <i>T8</i>					
	New Haven, Conn.									7.875 <i>D1</i>					
	Baltimore, Md.									7.425 <i>T8</i>				15.90 <i>T8</i>	
	Phoenixville, Pa.					5.55 <i>P2</i>		5.55 <i>P2</i>							
	Sparrows Pt., Md.								5.10 <i>B3</i>		7.575 <i>B3</i>				
	New Britain, Bridgeport, Wallingford, Conn.			\$119.00 <i>N8</i>						7.875 <i>W1,S7</i>					
	Pawtucket, R. I. Worcester, Mass.									7.975 <i>N7</i> , <i>A5</i>				15.90 <i>N7</i> 15.70 <i>T8</i>	
MIDDLE WEST	Alton, Ill.								5.30 <i>L1</i>						
	Ashland, Ky.								5.10 <i>A7</i>		7.575 <i>A7</i>				
	Canton-Massillon, Dover, Ohio		\$102.00 <i>R3</i>	\$119.00 <i>R3</i> , \$114.00 <i>T5</i>						7.425 <i>G4</i>		10.80 <i>G4</i>			
	Chicago, Franklin Park, Evanston, Ill.	\$80.00 <i>U1</i> , <i>R3</i>	\$99.50 <i>U1</i> , <i>R3,W8</i>	\$119.00 <i>U1</i> , <i>R3,W8</i>	6.50 <i>U1</i> , <i>W8,P13</i>	5.50 <i>U1</i> , <i>W8,P13</i>	8.05 <i>U1</i> , <i>Y1,W8</i>	5.50 <i>U1</i>	5.10 <i>W8</i> , <i>N4,A1</i>	7.525 <i>A1,T8</i> , <i>M8</i>	7.575 <i>W8</i>		8.40 <i>W8</i> , <i>S9,I3</i>	15.55 <i>A1</i> , <i>S9,G4,T8</i>	
	Cleveland, Ohio										7.425 <i>A5,J3</i>		10.75 <i>A5</i>	8.40 <i>J3</i>	
	Detroit, Mich.			\$119.00 <i>R5</i>					5.10 <i>G3</i> , <i>M2</i>	7.425 <i>M2,S1</i> , <i>D1,P11</i>	7.575 <i>G3</i>	10.80 <i>S1</i>			
	Anderson, Ind.										7.425 <i>G4</i>				
	Gary, Ind., Harbor, Indiana	\$80.00 <i>U1</i>	\$99.50 <i>U1</i>	\$119.00 <i>U1</i> , <i>Y1</i>		5.50 <i>U1</i> , <i>I3</i>	8.05 <i>U1</i> , <i>J3</i>	5.50 <i>I3</i>	5.10 <i>U1</i> , <i>I3,Y1</i>	7.425 <i>Y1</i>	7.575 <i>U1</i> , <i>I3,Y1</i>	10.90 <i>Y1</i>	8.40 <i>U1</i> , <i>Y1</i>		
	Sterling, Ill.	\$80.00 <i>N4</i>				5.50 <i>N4</i>	7.75 <i>N4</i>	5.50 <i>N4</i>	5.20 <i>N4</i>						
	Indianapolis, Ind.									7.575 <i>R5</i>				15.70 <i>R5</i>	
	Newport, Ky.								5.10 <i>A9</i>					8.40 <i>A9</i>	
	Niles, Warren, Ohio Sharon, Pa.		\$99.50 <i>S1</i> , <i>C10</i>	\$119.00 <i>C10,S1</i>					5.10 <i>R3</i> , <i>S1</i>	7.425 <i>R3</i> , <i>T4,S1</i>	7.575 <i>R3</i> , <i>S1</i>	10.80 <i>R3</i> , <i>S1</i>	8.40 <i>S1</i>	15.55 <i>S1</i>	
	Owensboro, Ky.	\$80.00 <i>G5</i>	\$99.50 <i>G5</i>	\$119.00 <i>G5</i>											
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	\$80.00 <i>U1</i> , <i>P6</i>	\$99.50 <i>U1</i> , <i>C11,P6</i>	\$119.00 <i>U1</i> , <i>C11,B7</i>	6.50 <i>U1</i> , <i>J3</i>	5.50 <i>U1</i> , <i>J3</i>	8.05 <i>U1</i> , <i>J3</i>	5.50 <i>U1</i>	5.10 <i>P6</i>	7.425 <i>J3,B4</i> , 7.525 <i>E3</i>			8.40 <i>S9</i>	15.55 <i>S9</i>	
	Weirton, Wheeling, Follansbee, W. Va.					6.50 <i>U1</i> , <i>W3</i>	5.50 <i>W3</i>		5.50 <i>W3</i>	5.10 <i>W3</i>	7.425 <i>F3</i>	7.575 <i>W3</i>	10.80 <i>W3</i>		
	Youngstown, Ohio	\$80.00 <i>R3</i>	\$99.50 <i>Y1</i> , <i>C10</i>	\$119.00 <i>Y1</i>			8.05 <i>Y1</i>		5.10 <i>U</i>	7.425 <i>Y1,R5</i>	7.575 <i>U1</i> , <i>Y1</i>	10.95 <i>Y1</i>	8.40 <i>U1</i> , <i>Y1</i>	15.55 <i>R5</i> , <i>Y1</i>	
WEST	Fontana, Cal.	\$90.50 <i>K1</i>	\$109.00 <i>K1</i>	\$140.00 <i>K1</i>		6.30 <i>K1</i>	8.85 <i>K1</i>	6.45 <i>K1</i>	5.825 <i>K1</i>	9.20 <i>K1</i>					
	Geneva, Utah		\$99.50 <i>C7</i>			5.50 <i>C7</i>	8.05 <i>C7</i>								
	Kansas City, Mo.					5.60 <i>S2</i>	8.15 <i>S2</i>							8.65 <i>S2</i>	
	Los Angeles, Torrance, Cal.		\$109.00 <i>B2</i>	\$139.00 <i>B2</i>		6.20 <i>C7</i> , <i>B2</i>	8.75 <i>B2</i>		5.85 <i>C7</i> , <i>B2</i>	9.30 <i>C1,R5</i>				9.60 <i>B2</i>	17.75 <i>J3</i>
	Minneapolis, Colo.					5.80 <i>C6</i>			6.20 <i>C6</i>	9.375 <i>C6</i>					
	Portland, Ore.					6.25 <i>O2</i>									
	San Francisco, Niles, Pittsburg, Cal.		\$109.00 <i>B2</i>			6.15 <i>B2</i>	8.70 <i>B2</i>		5.85 <i>C7</i> , <i>B2</i>						
	Seattle, Wash.		\$109.00 <i>B2</i>			6.25 <i>B2</i>	8.80 <i>B2</i>		6.10 <i>B2</i>						
	Atlanta, Ga.					5.70 <i>A8</i>			5.10 <i>A8</i>						
	Fairfield, Ala. City, Birmingham, Ala.	\$90.00 <i>T2</i>	\$99.50 <i>T2</i>			5.50 <i>T2</i> , <i>R3,C16</i>	8.05 <i>T2</i>		5.10 <i>T2</i> , <i>R3,C16</i>		7.575 <i>T2</i>				
SOUTH	Houston, Lone Star, Texas		\$104.50 <i>S2</i>	\$124.00 <i>S2</i>		5.60 <i>S2</i>	8.15 <i>S2</i>							8.65 <i>S2</i>	

(Effective July 6, 1959)

IRON AGE STEEL PRICES		Sheets								WIRE ROD	TINPLATE†		
		Hot-rolled 18 ga. & lvs.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Holloware Enameling 29 ga.
EAST	Buffalo, N. Y.	\$10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price. 0.75 lb., 0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct \$2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Cocheschocken, Pa.	5.15 A2	6.325 A2				7.575 A2						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 B3			
	Fairless, Pa.	5.15 U1	6.325 U1				7.575 U1	9.325 U1			\$10.50 U1	\$9.20 U1	
	New Haven, Conn.												
	Phoenixville, Pa.												
MIDDLE WEST	Sparrows Pt., Md.	\$10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3	
	Worcester, Mass.										6.70 A5		
	Trenton, N. J.												
	Alton, Ill.										6.60 L1		
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7						
	Canton-Massillon, Dover, Ohio			6.875 R1, R3									
	Chicago, Joliet, Ill.	5.10 W8, A1					7.525 U1, W8			6.40 A5, R3,W8			
	Sterling, Ill.										6.50 N4,K2		
	Cleveland, Ohio	5.10 R3, J3	6.275 R3, J3	7.65 R3*	6.775 R3		7.525 R3, J3	9.275 R3, J3			6.40 A5		
	Detroit, Mich.	5.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3					
WEST	Newport, Ky.	5.10 A1	6.275 A1										
	Gary, Ind., Harbor, Indiana	5.10 U1, J3,Y1	6.275 U1, J3,Y1	6.875 U1, J3,Y1	6.775 U1, J3,Y1	7.225 U1	7.525 U1, Y1,J3	9.275 U1, Y1		6.40 Y1	\$10.40 U1, Y1	9.10 J3, U1,Y1	7.85 U1, Y1
	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2	6.875 G2							8.90 G2	7.95 G2
	Kokomo, Ind.			6.975 C9							6.50 C9		
	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2							
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7							
	Niles, Warren, Ohio Sharon, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 S1	7.225 S1*, R3	7.525 R3, S1	9.275 R3,				8.90 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 U1, J3,P6	6.275 U1, J3,P6	6.875 U1, J3 7.50 E3*	6.775 U1		7.525 U1, J3	9.275 U1, J3	10.025 U1, J3	6.40 A5, J3,P6	\$10.40 W5, J3	9.10 U1, J3	7.85 U1, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7								6.40 P7		
	Weirton, Wheeling, Follansbee, W. Va.	5.10 W3, W5	6.275 W3, F3,W3	6.875 W3, W5 7.50 W3*	6.775 W3, W5	7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	8.10 W5, W3	7.85 W5
SOUTH	Youngstown, Ohio	5.10 U1, Y1	6.275 Y1	7.50 J3*	6.775 Y1		7.525 Y1	9.275 Y1		6.40 Y1			
	Fontana, Cal.	5.825 K1	7.40 K1				8.25 K1	10.40 K1				\$11.85 K1	\$9.75 K1
	Geneva, Utah	5.28 C7											
	Kansas City, Mo.										6.65 S2		
	Los Angeles, Torrance, Cal.										7.20 B2		
	Minneapolis, Colo.										6.65 C6		
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7							7.20 C7	\$11.85 C7	\$9.75 C7
MIDDLE WEST	Atlanta, Ga.												
	Fairfield, Ala., Alabama City, Ala.	5.10 T2, R3	6.275 T2, R3	6.875 T2, R3	6.775 T2						6.40 T2,R3	\$10.50 T2	\$9.20 T2
	Houston, Texas										6.65 S2		

* Electrogalvanized sheets.

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*7.425 at Sharon-Niles is 7.825

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.										
STEEL PRICES		BARS					PLATES				WIRE	
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N.Y.	5.675 R3,B3	5.675 R3,B3	7.70 B3	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3				8.00 W6
	Claymont, Del.							5.30 C4		7.50 C4	7.95 C4	
	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4	
	Conshohocken, Pa.							5.30 A2	6.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.							5.30 P2	6.375 P2			
	Milton, Pa.	5.825 M7	5.825 M7									
	Hartford, Conn.			8.15 R3		9.325 R3						
	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
	Fairless, Pa.	5.825 U1	5.825 U1		6.875 U1							
	Newark, Camden, N.J.			8.10 W10, P10		9.20 W10, P10						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W10, 8.15 J3	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3	8.10 B3
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 B5, C14		9.325 A5,B5						8.30 A5, W6
	Spring City, Pa.			8.10 K4		9.20 K4						
	Alton, Ill.	5.675 L1										8.20 L1
	Ashland, Newport, Ky.							5.30 A7,A9		7.50 A9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15* R3		7.65 R3,R2	6.725 R3, 6.475 T5	9.025 R3,R2, 6.775 T5		5.30 E2				
MIDDLE WEST	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 U1,R3, W8,N4,P13	5.675 U1,R3, N4,P13,W8, 5.875 L1	7.65 A5, W10,W8, B5,L2,N9	6.725 U1,R3, W8	9.025 A5, W10,W8, L2,N8,B5	8.30 U1,W8, R3	5.30 U1,A1, W8,I3	6.375 U1	7.50 U1, W8	7.95 U1, W8	8.00 A5,R3, W8,N4, K2,W7
	Cleveland, Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18			9.025 A5, C13,C18	8.30 R3	5.30 R3,J3	6.375 J3		7.95 R3,J3
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3, 7.85 P8,B5, 7.65 R5		6.725 R5,G3	9.025 R5, 9.225 B5,P3, P8	8.30 G3	5.30 G3		7.50 G3	7.95 G3
	Duluth, Minn.											8.00 A5
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1,I3, Y1	5.675 U1,I3, Y1	7.65 R3,J3	6.725 U1,I3, Y1	9.025 R3,M4	8.30 U1,Y1	5.30 U1,I3, Y1	6.375 J3, II	7.50 U1, Y1	7.95 U1, Y1,I3	8.10 M4
	Granite City, Ill.											
	Kokomo, Ind.		5.775 C9									8.10 C9
	Sterling, Ill.	5.775 N4	5.775 N4									8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10	9.025 C10		5.30 R3,S1		7.50 SI	7.95 R3, SI	
	Owensboro, Ky.	5.675 G5				6.725 G5						
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1,J3	5.675 U1,J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 U1,J3, C11,B7	9.025 A5, W10,R3,S9, C11,C8,M9	8.30 U1,J3	5.30 U1,J3	6.375 U1,J3	7.50 U1, J3,B7	7.95 U1, J3,B7	8.00 A5, J3,P6
	Portsmouth, Ohio											8.00 P7
	Weirton, Wheeling, Fellowsbee, W. Va.								5.30 W5			
	Youngstown, Ohio	5.675 U1,R3, Y1	5.675 U1,R3, Y1	7.65 A1,Y1, F2	6.725 U1,Y1	9.025 Y1,F2	8.30 U1,Y1	5.30 U1, R3,Y1		7.50 Y1	7.95 U1,Y1	8.00 Y1
WEST	Emeryville, Fontana, Cal.	6.425 J5, 6.375 K1	6.425 J5, 6.375 K1		7.715 K1		9.00 K1	6.10 K1		8.30 K1	8.75 K1	
	Geneva, Utah							5.30 C7				7.95 C7
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2		8.55 S2					8.25 S2
	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S12	7.715 B2	11.00 P14, S12	8.625 B2					8.95 R2
	Minnequa, Colo.	6.125 C6	6.125 C6					6.15 C6				8.25 C6
	Portland, Ore.	6.425 O2	6.425 O2									
	San Francisco, Niles, Pittsburgh, Cal.	6.375 C7, 6.425 B2	6.375 C7, 6.425 B2				8.675 B2					8.95 C7,C6
	Seattle, Wash.	6.425 B2,N6, A10	6.425 B2,A10				8.675 B2	6.20 B2		8.40 B2	8.85 B2	
	Atlanta, Ga.	5.675 A8	5.675 A8									8.00 A8
	Fairfield City, Ala., Birmingham, Ala.	5.675 T2,R3, C16	5.675 T2,R3, C16	8.25 C16			8.30 T2	5.30 T2,R3		7.95 T2	8.00 T2,R3	
SOUTH	Houston, Ft. Worth, Lone Star, Texas	5.925 S2	5.925 S2		6.975 S2		8.55 S2	5.40 S2		7.60 S2	8.05 S2	8.25 S2

† Merchant Quality—Special Quality 35¢ higher.

(Effective July 6, 1959)

* Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armcro Steel Corp., Middletown, Ohio
A8 Atlanta Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.
B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeve Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.
F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.
H1 Hanna Furnace Corp., Detroit
J2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland
J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mig. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.
K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.
L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.
O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland
P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit

PIPE AND TUBING

Base discounts (pt) f.o.b. mills. Base price about \$200 per net ton.

STANDARD T. & C.	BUTTWELD												SEAMLESS												
	1/2 in.		3/4 in.		1 in.		1/4 in.		1/2 in.		2 in.		2 1/2 in.		2 in.		2 1/2 in.		3 in.		3 1/2-4 in.				
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	
Sparrows Pt. B3	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50											
Youngstown R3	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Fontana K1	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	+0.75	+15.50											
Pittsburgh J3	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Alton, Ill. L1	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50											
Sharon M3	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Fairless N2	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50											
Pittsburgh N1	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Wheeling W5	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Wheatland W4	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Youngstown Y1	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
Indiana Harbor Y1	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50											
Lorain N2	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.75	13.75	+2.50											
EXTRA STRONG PLAIN ENDS																									
Sparrows Pt. B3	4.75	*9.0	8.75	*5.0	11.75	*6.50	12.25	+1.75	12.75	*6.75	13.25	*6.25	13.75	+2.50											
Youngstown R3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Fairless N2	4.75	*9.0	8.75	*5.0	11.75	1.50	12.25	+1.75	12.75	0.75	13.25	+2.50	13.75	+1.50											
Fontana K1	*6.25	*2.25	0.75	*1.50	1.25	1.75	2.25	2.75	3.25	3.75	4.25	4.75	5.25	5.75											
Pittsburgh J3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Alton, Ill. L1	4.75	*9.0	8.75	*5.0	11.75	1.50	12.25	+1.75	12.75	0.75	13.25	+2.50	13.75	+1.50											
Sharon M3	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Pittsburgh N1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Wheeling W5	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Wheatland W4	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Youngstown Y1	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											
Indiana Harbor Y1	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50											
Lorain N2	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50											

Threads only, butt-welded and seamless, 2 1/4 pt. higher discount. Plain ends, butt-welded and seamless, 3-in. and under, 5 1/2 pt. higher discount. Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11¢ per lb.

(Effective July 6, 1959)

To identify producers, see Key on preceding page

TOOL STEEL

F.o.b. mill	Cr	V	Mo	Co	per lb	SAE
W 4	1	—	—	—	\$1.84	T-1
18 4	1	—	5	2.545		T-4
18 4	2	—	—	2.005		T-2
1.5 4	1.5	8	—	1.20		M-1
6 4	3	6	—	1.59		M-3
6 4	2	5	—	1.345		M-2
High-carbon chromium..	.355	D-3, D-5				
Oil hardened manganese	.505	O-2				
Special carbon .....	.38	W-1				
Extra carbon .....	.38	W-1				
Regular carbon .....	.325	W-1				
Warehouse prices on east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.						

CLAD STEEL

Base prices, cents per lb f.o.b.

Stainless Type	Cladding			Sheet (12)
	10 pct	15 pct	20 pct	20 pct
302.....				37.50
304.....	28.80	31.55	34.30	40.00
316.....	42.20	46.25	50.25	58.75
321.....	34.50	37.75	41.05	47.25
347.....	40.80	44.65	48.55	57.00
405.....	24.60	26.90	29.25	....
410.....	22.70	24.85	27.00	....
430.....	23.45	25.65	27.90	....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.15; 1 side, 36.20.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Tack Bolts Untested
Bessemer UI.....	5.75	6.725	7.25			15.35
Cleveland R3.....						
St. Chicago R3.....				10.10		
Ensley T2.....	5.75	6.725				
Fairfield T2.....		6.725		10.10	6.875	
Gary UI.....	5.75				6.875	
Huntington C16.....		6.725				
Ind. Harbor I3.....				10.10		
Johnstown B3.....		6.725				
Joliet UI.....			7.25			
Kansas City S2.....				10.10		15.35
Lackawanna B3.....	5.75	6.725	7.25		6.875	
Lebanon B3.....			7.25			15.35
Minnequa C6.....	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh P5.....						14.75
Pittsburgh J3.....				10.10		
Seattle B2.....				6.75		15.85
Steelton B3.....	5.75		7.25		6.875	
Struthers Y1.....				10.10		
Torrance C7.....					6.75	
Williamsport S5.....		6.725				
Youngstown R3.....				10.10		

COKE

Furnace, beehive (f.o.b.)	Net-Ton
Connellsburg, Pa.	\$14.50 to \$15.50
Foundry, beehive (f.o.b.)	\$18.50
Foundry oven coke	
Buffalo, del'd	\$33.25
Detroit, f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedenland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.	Gross Ton
Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

F.o.b. Mill Cents Per Lb	22-Gage	Hot-Rolled (Cut Length)*	Cold-Reduced (Coiled or Cut Length)	
			Semi- Processed	Fully Processed
			Grain Oriented	
Field.....			9.875	
Armature.....	11.70		11.20	11.70
Elect.	12.40		11.90	12.40
Special Motor.....			12.475	
Motor.....	13.55		13.05	13.55
Dynamo.....	14.65		14.15	14.65
Trans. 72.....	15.70		15.20	15.70
Trans. 65.....	16.30			
Trans. 58.....	16.80		Trans. 80.....	19.70
Trans. 52.....	17.85		Trans. 73.....	20.20
			Trans. 66.....	20.70

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Col	Col	Col	Col	Standard Q Coated Nails					
					Woven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Wire	March. Wire Amt'd	March. Wire Gals.
Alabama City R3.....	173	187			212	193	9.00	9.55		
Aliquippa J3**.....	173	190			190	9.00	9.675			
Atlanta A8**.....	175	192			214	193	8.75	9.425		
Bartonsville K2**.....	175	192	178	194	198	9.10	9.775			
Buffalo W6.....										
Chicago R3.....	177	190	172	212	196	9.00	9.70			
Cleveland A6.....										
Cleveland A5.....										
Crawf'dor M4**.....	175	192	214	195	9.10	9.725				
Donora, Pa. A5.....	173	187	212	193	9.00	9.55				
Duluth A5.....	173	187	212	193	9.00	9.55				
Fairfield, Ala. T2.....	173	187	212	193	9.00	9.55				
Gaithersburg, Md. C4.....	178	192	217	198	9.25	9.80				
Galveston, Tex. C4.....	184-1	197	219	203	9.10	9.725				
Jacksonville M4.....	173	190	171	196	9.00	9.675				
Johnstown B3**.....	173	190	212	193	9.00	9.55				
Joliet, Ill. A5.....	173	187	212	193	9.00	9.55				
Kokomo C9.....	175	189	214	195*	9.10	9.65*				
L. Angeles B2**.....	178	192	217	198*	9.25	9.80				
Kansas City S2*.....	178	192	217	198*	9.25	9.80				
Minneapolis C6.....	178	192	217	198*	9.25	9.80				
Monaca, Pa. W6.....					193	8.65	9.325			
Pittsburgh, Pa. C7.....	172	210	213	200	9.60	10.15				
Ramkin, Pa. A5.....	173	187	193	180	9.00	9.55				
So. Chicago R3.....	173	187	226	216	9.95	10.50				
S. San Fran. C6.....	175	189	214	198	9.10	9.775				
Sparrows Pt. B3**.....	175	187	214	198	8.65	9.20				
Struthers, O. Y1.....	179									
Worcester A5.....										
Williamsport S3.....										

* Zinc less than .10¢. ** .10¢ zinc.

** 11-12¢ zinc. † Plus zinc extras.

† Wholesalers only.

C-R SPRING STEEL

F.o.b. Mill	CARBON CONTENT					
	0.26	0.41	0.61	0.81	1.06	1.35
Anderson, Ind. G4.....	8.95	10.40	12.60	15.60	18.55	
Baltimore, Md. T8.....	9.50	10.70	12.90	15.90	18.85	
Bristol, Conn. W12.....	10.70	12.90	16.10	19.30		
Boston T8.....	9.50	10.70	12.90	15.90	18.85	
Buffalo, N. Y. R7.....	8.95	10.40	12.60	15.60	18.55	
Carnegie, Pa. S9.....	8.95	10.40	12.60	15.60	18.55	
Cleveland A5.....	8.95	10.40	12.60	15.60	18.55	
Dearborn S1.....	9.05	10.50	12.70			
Detroit D1.....	9.05	10.50	12.70	15.70		
Detroit D2.....	9.05	10.50	12.70	15.70		
Dover, O. G4.....	8.95	10.40	12.60	15.60	18.55	
Evanson, Ill. M8.....	9.05	10.40	12.60			
Franklin Park, Ill. T8.....	9.05	10.40	12.60	15.60	18.55	
Harrison, N. J. C11.....	9.10	10.55	12.60	15.60	18.55	
Indianapolis R5.....	9.10	10.55	12.60	15.60	18.55	
Los Angeles C1.....	11.15	12.60	14.80	17.80		
New Britain, Conn. S7.....	9.40	10.70	12.90	15.90	18.85	
New Castle, Pa. B4.....	8.95	10.40	12.60	15.60	18.55	
New Haven, Conn. D1.....	9.40	10.70	12.90	15.90	18.85	
Pawtucket, R. I. N7.....	9.50	10.70	12.90	15.90	18.85	
Rivervale, Ill. A1.....	9.05	10.40	12.60	15.60	18.55	
Sharon, Pa. S1.....	8.95	10.40	12.60	15.60	18.55	
Trenton, R4.....			10.70	12.90	16.10	19.30
Wallingford W1.....	8.95	10.40	12.60	15.60	18.75	
Warren, Ohio T4.....	9.40	10.70	12.90	15.90	18.85	
Worcester, Mass. A5.....	9.50	10.70	12.90	15.90	18.85	
Youngstown R5.....	9.10	10.55	12.60	15.60	18.55	

BOILER TUBES

F.o.b. Mill	Size					Seamless	Elec. Weld
	OD-In.	B.W.- G.	H.R.	C.D.	H.R.		

METAL POWDERS

Cents per lb., minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	\$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	\$3.60 to \$3.95
Nickel	\$1.05 to \$1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	\$1.07
Stainless Steel, 316	\$1.26
Steel, atomized, prealloyed, 4600 series	\$14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25 + %, per lb., f.o.b.	\$11.25
Tungsten	\$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine 3/8" and smaller x 3"	55	57	61	62
5/8" diam. x 3" and shorter	47	49½	54	55
5/8" thru 1" diam x 3" and shorter	37	39½	46	46
5/8" thru 1" diam, longer than 6" and 11/2" and larger x all lengths	31	34	40	41
Rolled thread, 5/8" and smaller x 3" and shorter	55	57	61	62
Carrage, lag, plow, tan, blank, step, elevator and fitting up bolts 5/8" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity.
Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.

	Full case or Keg price
3/4 in. or smaller	62
5/8 in. to 1 1/2 in. inclusive	56
1 1/8 in. and larger	51 1/2

C. P. Hex, reg. & hvy.

3/4 in. or smaller	62
5/8 in. to 1 1/2 in. inclusive	56
1 1/8 in. and larger	51 1/2

Hot Galv. Hex Nuts (All Types)

3/4 in. and smaller	41
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Semi-finished Hex Nuts

3/4 in. or smaller	62
5/8 in. to 1 1/2 in. inclusive	56
1 1/8 in. and larger	51 1/2
(Add 25 pct for broken case or keg quantities)	

Finished

7/8 in. and smaller	65
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Rivets

	Base per 100 lb
5/8 in. and larger	\$12.85
7/16 in. and smaller	16

Cap Screws

	Discount (Packages)
Full Flushed H. C. Heat Treat	
New std. hex head, packed	

Full Case

% diam. and smaller x 6" and shorter	54	42
3/4" and 7/8" and 1" diam. x 6" and shorter	38	28
5/8" diam. and smaller x 6" and shorter	..	..
5/8" diam. and smaller x longer than 6"	..	..
5/8" and 7/8" and 1" diam. x longer than 6"	..	..
	C-1018 Steel	
	Full-finished	
	Cartons Bulk	
1/4" through 5/8" dia. x 6" and shorter	59	48
5/8" through 1" dia. x 6" and shorter	45	32
Minimum quantity—5/8" through 5/8" dia., 15,000 pieces; 7/16" through 5/8" dia., 5,000 pieces; 5/8" through 1" dia., 2,000 pieces.		

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb., ft. allowed in quantity)

Copper

Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	38.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots	18.00
Nickel, 99 pet plus add 1¢ per lb.	
5000 lb (Rolled depolarized add 3¢ per lb.)	1.0225
Cadmium, ball anodes \$1.05 per lb (approx.).	
Tin, ball anodes \$1.05 per lb (approx.).	

Chemicals

(Cents per lb., f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums (Philadelphia price 24.00)	23.70
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum, N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6
Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.	

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery?	Sheets		Strip	Plates	Shapes	Bars		Alloy Bars					
		Hot-Rolled (18 ga. & brn.)	Cold-Rolled (15 ga.)	Galvanized (10 ga.)	Hot-Rolled	Standard Structural	Hot-Rolled merchant	Cold-Finished	Hot-Rolled 4615 As rolled	Hot-Rolled 4110 Annealed	Hot-Rolled 4110 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4110 Annealed	
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*					
Baltimore	\$10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08	
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99						
Boston**	\$10	10.22 ¹	11.27 ²	12.07 ³	12.17 ⁴	10.42 ⁵	10.72 ⁶	10.34 ⁷	13.45*	16.79	15.79	20.29	19.54	
Buffalo		8.55	9.75	11.00	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30	
Chicago**	\$15	8.39 ¹	9.60	11.05	10.35 ⁴	8.62 ⁵	8.16 ⁶	8.79 ⁷	9.30	16.20	15.20	19.70	18.95	
Cincinnati**	\$15	8.56 ¹	10.41 ²	11.10	10.67 ⁴	9.00 ⁵	8.84 ⁶	9.11 ⁷	11.68*	16.52	15.52	20.02	19.27	
Cleveland**	\$15	8.32 ¹	9.61 ²	11.16 ³	10.36 ⁴	8.76 ⁵	8.63 ⁶	9.36 ⁷	11.40*	16.31	15.31	19.81	19.06	
Denver		9.60	11.84	12.84	9.63	9.96	10.04	10.00	11.19					20.84
Detroit**	\$15	8.65 ¹	10.61 ²	11.40	10.72 ⁴	8.99 ⁵	8.84 ⁶	9.10 ⁷	9.66	15.46	15.46	18.81	19.23	
Houston		8.10	8.60	8.15	8.45	8.85	8.10	11.60	16.20	15.25	19.65	18.95		
Kansas City	\$15	9.02	10.27	11.37	9.33	9.71	9.82	9.51	10.22	16.87	15.87	20.37	19.62	
Los Angeles		8.70 ¹	11.20 ²	12.20	9.15	9.10	9.00	9.10	12.95	17.30	16.35	21.30	20.60	
Memphis		8.55	9.80	8.60	8.93	9.01	8.97	12.11*						
Milwaukee**	\$15	8.53 ¹	9.74 ²	11.19	10.40 ⁴	8.76 ⁵	8.30 ⁶	8.93 ⁷	9.54	16.34	15.34	19.84	19.09	
New York		9.27	10.59	11.48	9.74	9.87	9.84	10.09	13.35*	16.16	15.60	20.10	19.35	
Norfolk		8.20	8.20	8.30	8.65	9.20	8.90	10.70						
Philadelphia		8.10	9.30	10.71	9.35	9.25	9.20	9.50	12.05*	16.58	15.58	20.08	19.33	
Pittsburgh**	\$15	8.32 ¹	9.61 ²	10.95 ³	10.36 ⁴	8.52 ⁵	8.24 ⁶	8.62 ⁷	11.40*	16.20	15.20	19.70	18.95	
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25	
San Francisco		9.75	11.20 ²	11.50	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60	
Seattle		10.30	11.55	12.50	10.25	10.10	10.20	10.50	14.70	17.15	16.90	20.65	20.40	
Spokane		10.45	11.70	10.90	10.65	10.25	10.35	11.15	14.85	17.75	16.95	21.55	20.75	
St. Louis**	\$15	8.77 ¹	9.98 ²	11.43	10.73 ⁴	9.00 ⁵	9.76 ⁶	9.17 ⁷	9.93	16.58	15.58	20.08	19.33	
St. Paul		8.94	9.31	10.47	8.99	9.45	9.53	9.70	11.49		15.41			

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** Prices based on 2000 lb item quantities except for galv. sheet, e-f and alloy bars. ¹ Add 10¢ zinc. ² Deduct for country delivery. ³ C1018—1 in. rounds, 110 ga. x 36 x 96—120; 20 ga. x 36 x 96—120; ⁴ 10 ga. x 36 x 96—120; ⁵ 1/4" x 1" x 1"; ⁶ 1/4" x 84"; ⁷ I-Beams 6 x 12.5; Rounds—3/4" to 15/16"; ⁸ 16 ga. & heavier; ⁹ 14 ga. & lighter.

(Effective July 6, 1959)

THE IRON AGE, July 9, 1959

PIG IRON

Dollars per gross ton, f.o.b.,
subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. <i>B6</i>	68.00	68.50	69.00	69.50	
Birmingham <i>R3</i>	62.00	62.50*			
Birmingham <i>W9</i>	62.00	62.50*	66.50		
Birmingham <i>U4</i>	62.00	62.50*	66.50		
Buffalo <i>R3</i>	66.00	66.50	67.00	67.50	
Buffalo <i>III</i>	66.00	66.50	67.00	67.50	
Buffalo <i>W6</i>	66.00	66.50	67.00	67.50	
Chester <i>P2</i>	63.00	68.50	69.00		
Chicago <i>I4</i>	66.00	66.50	66.50	67.00	
Cleveland <i>A5</i>	66.00	66.50	66.50	67.00	71.00†
Cleveland <i>R3</i>	66.00	66.50	66.50	67.00	
Duluth <i>I4</i>	66.00	66.50	66.50	67.00	71.00†
Erie <i>I4</i>	66.00	66.50	66.50	67.00	71.00†
Everett <i>M6</i>	67.50	68.00	68.50		
Fontana <i>K1</i>	75.00	75.50			
Geneva, Utah <i>C7</i>	66.00	66.50			
Granite City <i>C2</i>	67.90	68.40	68.90		
Hubbard <i>Y1</i>			66.50		
Iron Mountain, Utah <i>C7</i>	66.00	66.50			
Midland <i>C11</i>	66.00				
Minneapolis <i>C6</i>	68.00	68.50	69.00		
Moneses <i>P6</i>	66.00				
Neville Is. <i>P4</i>	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda <i>T1</i>	66.50	67.00	67.50		
Sharpstown <i>S3</i>	66.00	66.50	66.50	67.00	
St. Chicago <i>R3</i>	66.00	66.50	66.50	67.00	
St. Chicago <i>W8</i>	66.00	66.50	66.50	67.00	
Swedenborg <i>A2</i>	68.00	68.50	69.00	69.50	
Toledo <i>I4</i>	66.00	66.50	66.50	67.00	
Troy, N. Y. <i>R3</i>	68.00	68.50	69.00	69.50	73.00†
Youngstown <i>Y1</i>			66.50		

DIFFERENTIALS: Add .75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct); 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct; \$2 per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31 to 0.69 pct phosphorus.

Silvery Iron: Buffalo (6 pct), *H1*, \$79.25; Jackson *J1*, *J4* (*Globe Div.*), \$78.00; Niagara Falls (15.01 to 15.50), \$101.00; Keokuk (14.01 to 14.50), \$103.50; (15.51 to 16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.); \$64.00. Add \$1.00 premium for all grades silvery to 18 pct.

* Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.75	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.50	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	31.25	31.00	31.75
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Red HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.75	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; Vandergrift, Pa., *U1*; Washington, Pa., *W2*, *J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Detroit, *M2*; Louisville, O., *R5*.

Strip: Midland, Pa., *C11*; Waukegan, Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Detroit, *S7*; Canton, Massillon, O., *R3*; Harrison, N. J., *D1*; Youngstown, *R5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3* (plus further conversion extra); *W1* (25¢ per lb. higher); Seymour, Conn., *S3*; (25¢ per lb. higher); New Bedford, Mass., *R6*; Gary, *U1*; (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7*; S. Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1*; *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*; S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*, *R3*; Ft. Wayne, *I4*; Detroit, *R5*; Gary, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*; Ambridge, Pa., *B2*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *I4*; Newark, N. J., *D2*; Harrison, N. J., *D3*; Baltimore, *E1*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*; Detroit, *R5*; Reading, Pa., *C2*; Bridgeport, Conn., *N8*; Gary, *U1*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*; S. Chicago, *U1*; *J2*; McKeesport, Pa., *U1*; *F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R5*; S. Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Pittsburgh, *C2*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C11*; Vandergrift, Pa., *U1*; Gary, *U1*.

Forging billets: Ambridge, Pa., *B7*; Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*; Munhall, Pa., *S*; Chicago, *U1*; Owensboro, Ky., *G5*; Bridgeport, Conn., *N8*; Reading, Pa., *C2*.

(Effective July 6, 1959)

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PANNIER'S SUPREME HOLDER WITH ROTO-PIN LOCK
Safe, fast type changing. Holder in variety of styles.
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with the NEW



New Efficiency

The sensational new FLEX-A-PRENE Paint Mask keeps out paint pigments and solvents with amazing efficiency, yet it's light (just 1 ounce), comfortable and so easy to talk and breathe through you hardly know you're wearing it.

New Economy

Flex-A-Prene's low first cost is only part of the story. Most important savings come from its endurance in service and time saved through less frequent filter replacements. You can expect at least 100 hours of exposure before filter replacement is necessary.



Sample: \$1.50 postpaid
(INDUSTRIAL PRICE ONLY)

FLEXO Products, Inc.
Westlake, Ohio

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd.	67-71% Cr, .30-1.00% max. Si,
0.02% C	41.00
0.05% C	39.00
0.10% C	38.50
0.20% C	38.25
4.00-4.50% C	60-70% Cr, 1-2% Si,
3.50-5.00% C	57-64% Cr, 2.00-4.50% Si
0.025% C (Simplex)	28.25
8% max. Cr, 50-55% Cr, 6% max. Si,	39.75
4.1% max. C, 50-55% Cr, 2% max. Si	25.75
Si	26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe,	
0.10% max. C	\$1.29
9 to 11% C, 88-91% Cr, 0.75% Fe	1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate ($\frac{1}{8}$ " thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	
Carloads	\$1.15
Ton lots	1.17
Less ton lots	1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.	
Price is sum of contained Cr and contained Si.	
Cr	Si
Carloads, bulk	28.25
Ton lots	33.50
Less ton lots	35.10
14.60	16.05
17.70	

Calcium-Silicon

Per lb of alloy, lump, delivered, packed, 30-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads, bulk	24.00
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.	
16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads, bulk	23.00
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-1% Mn, 5-7% Zr, 20% Fe $\frac{1}{2}$ in. x 12 mesh.	
Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 8-11% Mn, packed.	
Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload bulk	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn. Carload lots, bulk.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philip, Ohio	12.25
S. Duquesne	12.25
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.	
Manganese Silicon	
16 to 19% 3% max.	\$100.50
19 to 21% 3% max.	102.50
21 to 23% 3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

f.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	34.00
Ton lots	36.00
25 to 1999 lb	38.00
Premium for Hydrogen - removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn	
Carloads	25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.	
Carloads (Bulk)	41.15
90% Mn	37.15
0.07% max. C	35.10
0.10% max. C	34.35
0.15% max. C	33.60
0.30% max. C	32.10
0.50% max. C	31.60
0.75% max. C, 80.85%	28.60
5.0-7.0% Si	31.40
Min. 5.0-7.0% Si	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.	
Carloads bulk	12.80
Ton lots, packed	14.45
Carloads, bulk, delivered, per lb of briquet	15.10
Briquets, packed pallets, 2000 lb up to carloads	17.50

Silvery Iron (electric furnace)

SI 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area. SI 15.01 to 15.50 pct., f.o.b. Niagara Falls, N. Y., \$93.00.	
Ton lots	21.15
Less ton lots	22.40

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.	
Ton lots	22.45
Carloads	21.25
98.25% Si, 1.0% Fe	20.65

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.	
Carloads, bulk	8.00
Ton lots, packed	10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.
50% Si.... 14.60
65% Si.... 15.75
90% Si.... 20.00

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.	
Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.	
Cast	\$2.05
Turnings	\$2.95
Distilled	\$3.75

100 to 1999 lb. 2.40 3.30 4.55

(Effective July 6, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	\$9.85¢
Ton lots	11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langelothe, Pa., per pound contained Mo.

Ton lots	\$1.50
Less ton lots	3.50

Ferrocolumbium, 58-62% Cr, 2 in. x D, delivered per pound

Ton lots	\$3.45
Less ton lots	3.50

Ferro-tantalum-columbium, 20% Ta, 40% Cr, 0.30% C, del'd ton lots, 2-in. x D per lb can't Cr plus Ta

Ton lots	\$3.40
Less ton lots	3.50

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langelothe, Pa., per pound contained Mo.

Ton lots	\$1.76
Less ton lots	2.00

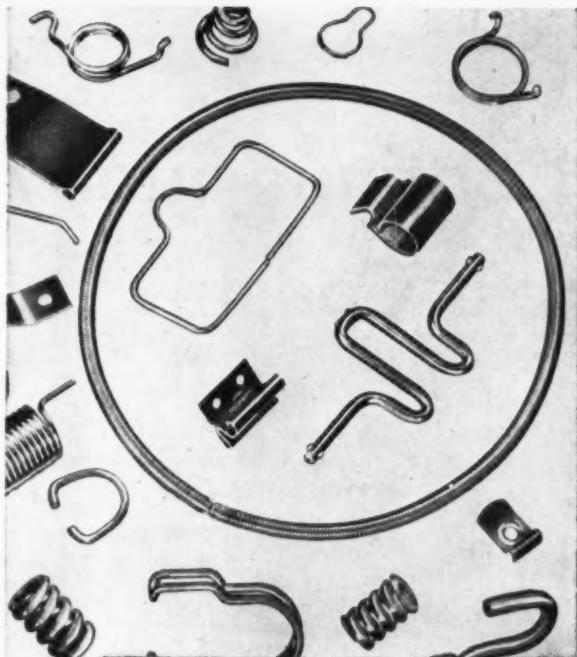
Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$5.00 unitage, per gross ton

10 tons to less carload	\$120.00
Less than 10 tons	\$131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

Ton lots	\$1.35
Less ton lots	1.54

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti



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We're ready to help you with your spring purchases. We have the long years of experience so necessary to produce springs in any volume and to your exact specifications. Our research and testing facilities are the finest. Our production men have a reputation for making the springs you need economically. For springs, wire forms and small parts, give us a call. You'll find spring buying is easy when you deal with a spring-making specialist.

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NEW FAS-LOK STORAGE RACK

LOCKS
IN A
SECOND



- ONLY 2 BASIC PARTS ... QUICK ERECTION
- NO WEDGES ... NO BOLTS, NUTS, OR TOOLS REQUIRED
- SAFE ... RUGGED ... COMPLETELY ADJUSTABLE
- Easy access — front or rear.

FAS-LOK Racks can be quickly assembled into unlimited combinations of height, length, and shelf opening. Rigidly braced end frames, in standard heights from 5' to 22' 6", have slots punched in uprights on 3" centers. Horizontal runners have hookplates at each end. Each hookplate has two tapered ears which fit slots of upright (inset). To assemble FAS-LOK Racks, ears are set into the wedge-shaped slots on upright and a tap on horizontal runner drives ears down, seating them securely in a wedging action to produce a rock-solid rack. Can be used to store any material—Pallets, Skids, Rolls, Bulk storage, etc.

Horizontal runners available in lengths to 20 ft.; End Frames in depths from 2' to 5'. End Frames made in capacities to 40,000 lbs.

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Templates

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STEEL BLUE**

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Without DYKEM Steel Blue

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

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on company letterhead*

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2303G North 11th St. • St. Louis 6, Mo.

CUT SCRAPER TIME END NIGHT CLEANUP & MORNING REBLUING

DYKEM HI-SPOT BLUE No. 107 is used to locate high spots when scraping bearing surfaces. As it does not dry, it remains in condition on work indefinitely, saving scraper's time. Intensely blue, smooth paste spreads thin, transfers clearly. No grit; noninjurious to metal. Uniform. Available in collapsible tubes of three sizes. Order from your supplier. Write for free sample tube on company letterhead.

THE DYKEM CO., 2303G NORTH 11TH ST., ST. LOUIS 6, MO.

ELECTRICAL POWER EQUIPMENT IN STOCK

DC MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3900	New Elliott	Enc. F. V.	475	320
1	3000	New Whse.	Enc. F. V.	525	600
1	2250	New Elliott	Enc. F. V.	600	200/300
1	2200	G.E.	MCP	600	400/500
1	1750	New Elliott	Enc. F. V.	250	175/350
8	1500	New Whse.	Enc. F. V.	525	600
1	1200	G.E.	MCP-12	300	200/400
1	1200	G.E.	MCP	600	450/600
1	1000	Whse.		500	800/2000
1	910	Whse.	QM	250	140/170
1	910	S.S.	Enc. F. V.	600	800/1000
2	800	G.E.	MCP	250	400/750
2	765	Allis Ch.	MHC	550	1012/1350
7	750	G.E.	MCP	600	400/600
1	750	G.E.	M.F.	600	120/250
4	600	Whse.		250	275/350
1	590	G.E.	MPC-10	250	188/400
1	450	Whse.		550	415
1	400	G.E.	CY-275	300	1000/1500
1	325	Allis Ch.	MHC	250	450/900
1	300	Cr. Wh.	H-102 B. P.	250	1200
1	200	Rel. B. B.	F-661-D. P.	240	600
1	200	Whse.	CH-297-D	250	850/1200
1	150	Cr. Wh.	CMC-65H	230	1150
1	150	G.E. B. B.	TLC-74	250	1150/3500
1	150	G.E. B. B.	CD	600	250/750
1	150	G.E.	CDP-125. B. B.	250	1750
1	150	A.C.	E.V.B.R.	250	450/1200
1	120	G.E. B. B.	TLC-50	250	1050/5000
1	120	Rel. B. B.	1050T	230	575/900
1	125	Whse.	SK-190	230	450/1200
1	125	Whse.	SK-185	230	350/1050
1	125	G.E.	CDP-145	230	1750
1	80	Whse.	SK-123.5	240	2000/4500
1	75	G.E. B. B.	CD-125-D. P.	600	850
1	60/75	Rel. B. B.	T-661-D. P.	240	300/1200
1	30/40	Whse. B. B.	SK-131, TEFC	250	500/1500
25/33	Rel. B. B.	TY563	240	300/1200	
1	40	Rel. B. B.	385P. TEFC	230	500/1500
1	30/40	Rel. B. B.	T-564-D. P.	240	300/1200

MERCURY ARC RECTIFIERS

3-150 KW, G.E., Sealed Tube Ignitron Unit, Sustained load centers 275 V. D.C., 2300 V. A.C. Pyranol filled transformers complete.
2-150 KW, G.E., Ignitron, 245 V. D.C.-230 V. A.C., air cooler transformers with controls.

MG SETS—3 Ph. 60 Cy.

Qu.	K.W.	Make	DC RPM	AC Volts
1	2000	G.E.	514	600
2	1750/2100	G.E.	514	250/300
1	1750	G.E.	514	600
1	1300	G.E.	720	600
1	1300	Cr. Wh.	4 unit	720, 100, 2500
1	500	G.E.	900	125, 250, 410
1	350	G.E.	900	125, 250, 410
1	300	G.E.	1200	270, 2300/4000
1	300	G.E.	1200	270, 2300
1	250	G.E.	900	250, 430, 2300
1	240	Whse.	900	125, 220, 410
1	200	Whse.	1200	550, 220, 410
1	200	El. Mfg.	1200	270, 2300/4000
1	150	G.E.	1200	275, 250, 2300
1	150	Whse.	1200	275, 250, 2300
1	150	G.E.	1200	125, 250, 410
1	140	Cr. Wh.	690	125, 250, 2300
1	100	G.E.	1170	250, 220, 410
2	100	Cr. Wh.	1160	525, 220, 550
1	100	G.E.	1200	250, 220, 4100
2	75	Whse.	1200	125, 440

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
2	3333	Whse.	OIFSC	1	13800 x 2300
3	1000	G.E.	CA/FA	1	13800 x 2300/4600
3	833	A.C.	OIFSC	1	4800 x 4800
1	750	Wagner	JPC-16	3	13200 x 480
2	750	G.E.	Pyrand	1	4800/5000/55-255-165
3	500	Kohl	OIFSC	1	13200 x 4800
6	333	G.E.	HS	1	7200/12470YX
5	333	G.E.	OIFSC	3	2400/4160YX600
5	150	G.E.	OIFSC	1	3300/2300/4000 Y
3	100	G.E.	HS	1	4800/8320 X 120/240

CRANE & MILL MOTORS 230 V., D. C.

Qu.	H.P.	Make	RPM	Type
12	12/14		700/600	MCA-30, Series
1	20	Whse.	975	K-7 Series
2	23	G.E.	650	MDS-408
1	23	G.E.	725	CO-1808, Series
1	35	Whse.	480	CK-9 Comp. S.B.
1	35	Whse.	480	CK-9 Shunt R.B.
1	35	Whse.	480	CK-9 Comp. R.B.
3	50	G.E.	850	COM-1830, Comp.
3	50	Whse.	525	CK-9 Shunt R.B.
2	50	Whse.	600	CK-9 Comp. R.B.
1	50	G.E.	525	COM-1830AEB.B.
1	50	Cr. Wh.	550	SW-50 Comp.
1	100	G.E.	475	CO-1832 S.B.
8	160-140	Whse.	500/415	MC-90 R.B.

RE-NU-BILT By

BELYEA COMPANY, INC.
47 Howell St. Jersey City 6, N.J.
Tel. Oldfield 3-3334

THE CLEARING HOUSE

Sales Continue Sunny On West Coast

Used machinery business in the Farwest is running about 25 pct ahead of year ago levels, dealers report.

Supplies still remain a problem, but the situation is improving.

■ Business is brisk on the West Coast. Dealers are still looking in eastern markets for needed equipment.

It's late-model, larger-size equipment they're after. Especially wanted are engine lathes and boring mills in good condition, not older than 1950 models.

Sales Up 25 Pct—How do sales compare with last year? Volume is running about 25 pct ahead, dealers report. They expect it to continue at about this pace for the rest of 1959. And those who look beyond the current year cite the talk of stepped-up capital spending a good reason to expect better business in the next few years.

Boring Mills Wanted—For the most part, however, dealer inventories are in good shape. Dealers managed to pick up a good bit of equipment lately. Much of it came from government sales and several good-sized auctions of private firms.

Selling well today in the southern California area are light boring mills. Several 36-in. mills, 8 to 10 years old, and in clean condition recently went for about \$5200. The buyers were missile-making plants. They'll use them for die work and turning rings.

Activity by structural steel fabricators is boosting the demand for shears in 3/8-in. and 1/2-in. sizes.

Northern Optimism—Business is holding up fine among northern California used machinery dealers checked by The IRON AGE. Dealers expect it to continue that way unless there's labor unrest.

A month's steel shutdown won't affect them much, several dealers say. But anything longer than that will produce a shortage of metal and, "who'll buy any machinery if he's got nothing to use it on?"

Tops in Demand—The supply of good used equipment is easing up some in the West—though not in large quantities. Medium size lathes, radial drills, mills, and standard tools enjoy best demand.

One dealer, who is in both new and used lines, says the new business is especially good and the sale of used machines is riding on this strength for new equipment.

May Sales Advanced

May used machinery sales topped those of any month since April, 1957 except February of this year.

That's what the Machinery Dealers National Assn. reports in its latest sales index.

May tool orders, says the MDNA, were 9.6 pct above April, 1959. And they were 46.6 pct above orders for May, 1958.

Individual unit sales this May topped April by 2.8 pct. They were 46 pct better than sales in May, 1958.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS

10" x 10 Ga. Berstach No. 6 Initial Type
12" x 14" Berstach Initial Type
20" x 14" Niles Pyramid Type
32" x 3/4" BALDWIN PYRAMID TYPE—Late

BRAKE—BOX & PAN

8" x 1/4" Dreis & Krump, 12" Finger Extension

BRAKES PRESS TYPE

90 ton Niagara, Model 90-8-10

8" x 3/16" Warco

16" x 10 Ga. Clearing

CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H	40' Span 220 Volt D.C.
5 ton P&H	55' Span 220/3/60 A.C.
8 ton P&H	55' Span 220/3/60 A.C.
10 ton P&H	39' Span 230 Volt D.C.
10 ton Milwaukee	57' Span 230 Volt D.C.
10 ton Shaw	48' Span 230 Volt D.C.
10 ton Whiting	73' Span 220/3/60 A.C.
10 ton Shaw	120' Span 230 Volt D.C.
30 ton Niles	70' Span 230 Volt D.C.
120 ton Niles	67' Span 230 Volt D.C.
120 ton Shepard Niles	77' Span 220/3/60 A.C.

DRAW BENCHES

7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

FLANGING MACHINE

Blue Valley Flanging Machine, Capacity 1/2"

FORGING MACHINES

1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING

800 lb. to 12,000 lb. incl.

HEADERS

2250C Manville Single Stroke Solid Die
244 Waterbury Farrel Dble Str Open Die
2" National DSBD, with 1" National Hydr. Straightener and #4 Ajax Hogue Wire Drawer—All new 1956

LEVELERS—ROLLERS

24" Torrington, 9 Rolls 8" Dia.
60" Guide 17 Rolls 4 1/2" Dia.

72" Lester 17 Rolls 2 1/2" Backed Up

NIBBLER

Pullmax Model 2, Capacity 11/32"

PRESSES—HYDRAULIC

300 ton Southwick Platen 28" x 28", Stroke 25"
500 ton Watson Stillman Piercing Press, 48" x 72"
600 ton Birdsboro, Platen 48" x 48", Stroke 15"
1000 ton Southwick Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 48" x 68", Stroke 40"

PRESS—KNUCKLE JOINT

4000 ton Cleveland Model 8-K, 6" Stroke

PUNCH & SHEAR COMBINATIONS

2 1/2" Buffalo Ironworker
2 1/2" Kling, 36" Throat Capacity 1 1/2" x 1"

RIVETERS

150 ton Southwick Hydr., 125" Throat

275 ton R. D. Wood Hydr., 18 1/2" Throat

ROLLING MILLS

3 1/2" x 77" Six Roll Cluster Mill
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 21" Two Stand Two High
20" x 26" Single Stand Two High
24" x 40" Single Stand Two High
12" x 32" Birdsboro 3-HI Bar Mill
22" x 40" Lewis 3-HI Sheet Mill
21" x 52" x 77" Three Stand 4-High

ROLL—FORMING

18" Stand Custom Built 2 1/2" Shaft, will take 36 wide
ROLLS—PLATE STRAIGHTENING

72" McKay 9 Rolls 15" Dia. Backed-up

92" Hillies & Jones, 6 Rolls 10" Dia.

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Model 122-B-A Ty-Sa-Man., Capacity 8 Cuts 2"
Deep at one time 15" wide, 16 ft. long

SCALPING OR BILLET PEELING MACHINE

Medium to Large Size HFBB, Capacity 3 1/2" to 5" incl.

SHEARS, MISC.

36" Halden Drum Type, Cap. 33-38 Ga.

60" x 10 Ga. Cut-off Line

SHEAR—ROTARY

No. 23A Quickwork Whiting 3 1/2" Capacity

SHEARS—SQUARING

6" x 11 Ga. Edwards, Motor Drive—LATE

10" x 10 Ga. Wysong & Miles

13" x 13" Stamford

8" x 14" Verscon Model E-18

SPLITTERS

36" Wear Slitting Line, Arbor 5" Dia.

84" Slitting Line, Arbor Dia. 7"

STRAIGHTENERS

Torrington #1734 12-Roll, Cap. 1 1/2", Rd. 1-9/16"

TESTING MACHINES

20,000 lb. Baldwin Univ. Hydraulic

50,000 lb. Baldwin 3-Series Beam Type Universal

500,000 lb. Olsen Super Deluxe Compression

WELDING POSITIONER

16,000# Ransome Model 160P

WIRE DRAWING MACHINES

Type B Morgan 4-Block Cap. #5' Rod down

Scudder 3-Block 20 Dia.

Superior 7-Draft Cone Type Cap. 14 Ga. down

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Hammers, Forging Pneumatic

3,000# Chambersburg, 40" stroke, 85 SPM, 8"x16" die face, 125 H.P. M.D.
6B Hazel, cap. 7" x 7" sq., 27" stroke,
120 SPM, 8"x10" die face, 40 H.P. M.D.
3B Hazel, cap. 4" x 4" sq., 16" stroke,
180 SPM, 4" x 8" die face, 10 H.P. M.D.

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GRant 1-3594

FOR SALE

1—3" Rd. Cap. Open End Vertical Bar Shear

1—2 1/4" Cap. Buffalo Billet Shear

1—5-Roll Abramson Tube Straightener 3/4" to 3" O.D. Tube

ALBERT CURRY & COMPANY, INC.
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125 KW M-G Sets

4—Reliance, Drip-proof, Ball Bearing Motor Generator Sets. 250 Volt DC, Stab-Shunt Generators, Synchronous Drive Motors, Unity power factor, 3/60/220/440/1200 RPM (direct connected exciters).

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No. 5 Bryant, m.d., latest
Model 5Y Bryant, m.d.
No. 16-16" Bryant, m.d., hydraulic hole grinder
No. 16-CR16 Bryant, m.d., latest
No. 16-22" Bryant, m.d., latest
No. 16-38" Bryant, m.d., latest
No. 16-A-28" Bryant, m.d.
No. 24-36" Bryant Hole & Face Type, m.d., latest
No. 24-P-24" Bryant, m.d.
No. 24-21" Bryant, m.d.
No. 24-L-34" Bryant, m.d., late
No. 24-LW-36 Bryant, m.d., late
No. 649-16" Van Norman Automatic Oscillating Radius, m.d., latest
No. 70A Heald, m.d., latest, 1945
No. 72A3 Heald, Full Universal, m.d.
No. 72A3 Heald Gagematic, m.d.
No. 72A3 Heald Plain Sizematic, m.d.
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Deep-box section similar to the Robertson type. Cross-section is 8" wide by 4" deep, rolled in continuous lock-joint lengths of 14, 16 or 18 gauge steel or aluminum. 10 stands of rolls for 3 1/2" diameter spindles; all air-hardened and ground finish tool steel. BRAND NEW, over 5 TONS of precision rolls capable of producing millions of feet in the most popular size commercial and industrial decking. Split-roll design will permit adaptation to wide variety of other decks, roll formed sections and panels. The replacement cost would be over \$22,000; rare bargain at \$6,950.

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I—AUTOMATIC COOLING BED FOR BARS up to 2" dia. consists of run-in table, cascade section, shute bar section, runout table, with all electrics, 200 ft. long.

I—28" & 52" x 77" TANDEM COLD REDUCTION MILL. 4-high, 3 stands.

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I—25" & 42" x 66" HOT STRIP MILL. 4-high

I—24" x 36" 2-HIGH MILL driven by 400 HP motor, 4600' 3.60.

I—22" x 36" 2-HIGH MILL driven by 600 HP motor, 4600' 3.60.

I—16" x 22" COLD MILL. 2-high.

I—8" x 10" COLD MILL including uncoiler, recoiler and edging rolls.

2—20" 3-HIGH ROLL STANDS.

I—New 16" BAR MILL, one 3-high roll stand, pinion stand.

I—New 12" BAR MILL, four 3-high stands, pinion stand.

I—12" MERCHANT BAR MILL with 18" roughing mill and heating furnace.

I—9" BAR MILL. 3-high.

2—MORGAN TRAVELING TILTING TABLES for 24" 3-high bar mill.

I—34" x 192" ROLL GRINDER.

2—65-TON ELECTRIC MELTING FURNACE. TOP CHARGE, with all electrical and mechanical equipment, including 15,000 KVA and 13,333 KVA transformers.

I—New top-charge ELECTRIC MELTING FURNACE with 2000 KVA transformer 13,200 volts, 3 phase, 60 cycle.

5—ANNEALING FURNACES, bell type, for sheets 80" wide, 180" long.

2—PACK FURNACES for hot sheet mills 62" x 60" double chamber.

I—ROLL LATHE, ENCLOSED HEADSTOCK, up to 36" dia. rolls.

I—OPEN HEARTH CHARGING MACHINE, 5 ton capacity 11" track gauge.

I—MAGNETIC SEPARATOR double pulleys, Stearns.

I—SIDE TRIMMER, Straube, maximum width 48", makes 2 cuts 3/16" mild steel.

I—STRETCHER LEVELLER, 800,000 lb. pull, for sheets up to 90" x 200".

I—ROLLER LEVELLER, 17 rolls 4" dia. x 72" face, pair of pinch rolls.

I—ROLLER LEVELLER, 17 rolls 3 3/4" dia. x 72" face.

I—HALLDEN STRAIGHTENING and cutting-off machine, capacity .562" brass rod.

I—POINTER for tubes 2" O.D. x 1/4" wall maximum.

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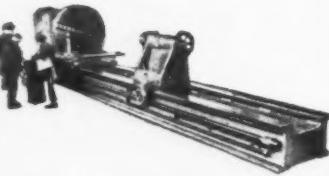
I—3000 HP GEAR DRIVE, ratio 300 to 93.8 RPM.

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I—3500 HP MOTOR, 11000/6000 volts, 3 phase, 60 cycle, 514 RPM, synchronous, never used.

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It's big—40" Swing x 33 foot bed, 3/4" hardened steel wearing plates installed in bed—also formica wearing plates under carriage and aluminum bronze under cross slide and tail stock. Tolerances same as new—performance same as new—price small fraction of new.

Balancer: Tinus Olsen 2E016, prop. shaft, 1948

Borer: No. 7D Moline, vert. 6 spdl. cyl.

Boring Mill: 4 Universal, table, Timken

Bulldozer: 180 ton No. 27 Williams & White

Centering Machine: 6" x 72" No. 56 Sundstrand

Chucker: 6 1/2" 665 New Britain, 1943

Compressor: 650 CFM Sullivan, 2 stage, 125 HP

Drill, Deep Hole: No. 420 W. F. & John Barnes, 1942

Drill: 21" Cin. Bick., SS, 1L, late

Drill, Radial: 4" 11" Carlton, 1941

Grinder, Cyl.: 10" x 36" Landis, Type BC, 1941

Grinder, Cyl.: 20" x 72" Landis Type D, 1943

Grinder, Disc: 22" No. 221 Hanchett opposed

Grinder, Surf.: 12" x 36" Mattison, 1942

Hammer: 100 lb. Murco upright

Lathe: 12" x 96" cc Niles

Mill, Boring: 60" Gisholt, vert.

Mill: 54" KAT plain vert. hd., 1941

Mill, Planer: 42" x 42" x 18" Ingersoll

Planer: 66" Rockford Hydr. open side, 1941

Press: 110 ton No. 675B Bliss high speed

Press: 260 ton No. 795-72 Toledo toggle

Press: 600 ton No. 664 Toledo coining

Press: 1000 ton Clearing air clutch coining

Press: 90 ton No. 75 Bliss Cons. Horn.

Press: 50 ton Henry & Wright Dieing

Press: 150 ton HPM Hydraulic SS, 1946

Press: 350 ton Elmes Hydr., 1944

Press: 800 ton Hamilton air clutch, SS, 1947

Roll: No. 18 Kane & Roach straightener, 2 1/2" bar

Saw: 10" x 10" Racing shear cut

Shaper: 12" Pratt & Whitney vert.

Shear: 96" x 5" cap, Beatty, 1942

Shear: 38" throat New Doty, comb.

Slotter: 36" Rockford Hydr., 1943

Uncoiler: Cleveland 72" wide

Upsetter: 4" National, air clutch, 1944

Contract rebuilding of your used machinery

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DIRECT CURRENT MOTORS

Qu.	H.P.	Make	Type	Volts	R.P.M.
2**	3000	Whse.	Rev.	600	600
1**	2200	Whse.	Vent.	600	52/132
4**	1400	Whse.	Rev.	600	600
4**	700	Whse.	Vent.	250	300/700
2**	645	S. & S.	Rev.	300	1000
2	600	Al.Ch.	Mill	600	300/600
1	600	Whse.	Mill	250	110/220

SLIP RING MOTORS

3 Phase—60 Cycle

Qu.	H.P.	Make	Type	Volts	R.P.M.
1	2500	Al.Ch.	Mill	2200	296
1	1800	Whse.	Mill	2300	252
3	1500	G.E.	Mill	6600/4160-V.	444
1	1000	Whse.	C.W.	2300	441
1	500	Ideal	8-12-20	4800	708
1	500	G.E.	MT-410	2200	385
1	500	Al.Ch.	ANY	2200	505
2	500	Al.Ch.	ANY	2200	295
1	400	Al.Ch.	ANY	2200	505
1	400	Whse.	C.W.	2200	290
1	350	G.E.	1-15-M	2200	1180
1	350	G.E.	MT-412	2200	450
1	300	Whse.	CW-1012	2200	704
1	300	G.E.	1-15B-M	440	1200

SYNCHRONOUS MOTORS

3 Phase—60 Cycle

Qu.	H.P.	Make	Type	Volts	R.P.M.
1	5600	Whse.		4760	1200
2	1100	Whse.		4160	450
1	960	G.E.		460	300
1	700	El.Mchy.		440	200
1	500	El.Mchy.		2300	720
1	450	Whse.		220	128
1	300	G.E.		2200	600
1	200	Whse.		440	600

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24" x 28" Hendey Geared Head Lathe, M.D.,
22 1/2" Centers.
54" Bullard Vert. Turret Lathe, Turret Head on
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No. 1/2, No. 1 1/2 Buffalo Univ. Ironworkers, M.D.
400 Ton Southwick Hyd. Inclined Wheel Press
6" x 1 1/2" Low Initial Bending Roll, M.D.

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MESTA HOT MILL SHEAR—2 1/2 x
48 in.—double housing, 30 in. gap
—75 H.P. Motor

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Size 2 1/2 Buffalo Ironworker
Size 16 Amplex Ironworker
Size 13 Sontag Ironworker
Size 1/2 Buffalo Ironworker with Notcher
Size 13 Reis Ironworker with Notcher
Size 13 Pedinghaus Ironworker with Coper
Size 1 Samson Ironworker with Notcher
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Cincinnati 36" heavy duty shaper,
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Brown and Sharpe #2000 Plain Milling Ma-
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Do-All Model D-6 Surface Grinder. New in
1954.

Brown & Sharpe #2 Plain Light Type Milling
Machine. Serial #4330. 1300 RPM. Universal
Vertical Head. 3 HP.

Brown & Sharpe #2 Vertical Milling Machine.
Serial #2340. 1530 RPM. Power Rapid
Traverse. 5 HP. New in 1951.

Nichols Hand Milling Machine. 1/2 HP. New
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South Bend Lathe. 13" x 6". Catalogue #113C.
New in 1948.

American Pacemaker Lathe. 20" x 78" Centers.
Raised in Sand to swing 25". 27 Speds to
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Coolant. 15 HP. New in 1956.

Kearney & Trecker #3CE-7/2 HP Milling Ma-
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Vertical Head. New in October, 1955.

Bertsch Initial Type BENDING ROLL. 12" x
5/16" Cap. Rear Roll Gared. Air Operated
Drop End. Rower Rear Roll Adjustment.
15 HP Main Motor. New in October, 1955.

All Motors are Three Phase
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OR WRITE BOX G-914
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600 WEST JACKSON BLVD.
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College degree preferred for these positions.

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NEW WANTED USED

Structural, Plate, Pipe and Tubing

Consumers Steel & Supply Co.
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SALES REPRESENTATIVE WANTED

Experienced, intelligent and ambitious metalworking man, high calibre only, between 35-45 yrs. old to represent manufacturer of metalworking and paper mill chemical specialties in Detroit area and New York State. (Two men will be chosen.) These two territories are established and paying commissions at the present time. Income in medium to high five figures a definite possibility in 2-3 yrs. Previous selling or chemical training are not necessarily required. Reply direct to Harry Miller Corp., 4th and Bristol Sts., Phila. 40, Pa. A personal interview will be arranged. Your reply confidential.

WANTED

for mill located in Southern State. Turn
Roller. Five stand repeater 12" Mill,
one stand 16" breakdown. Send de-
tailed resume and salary expected to

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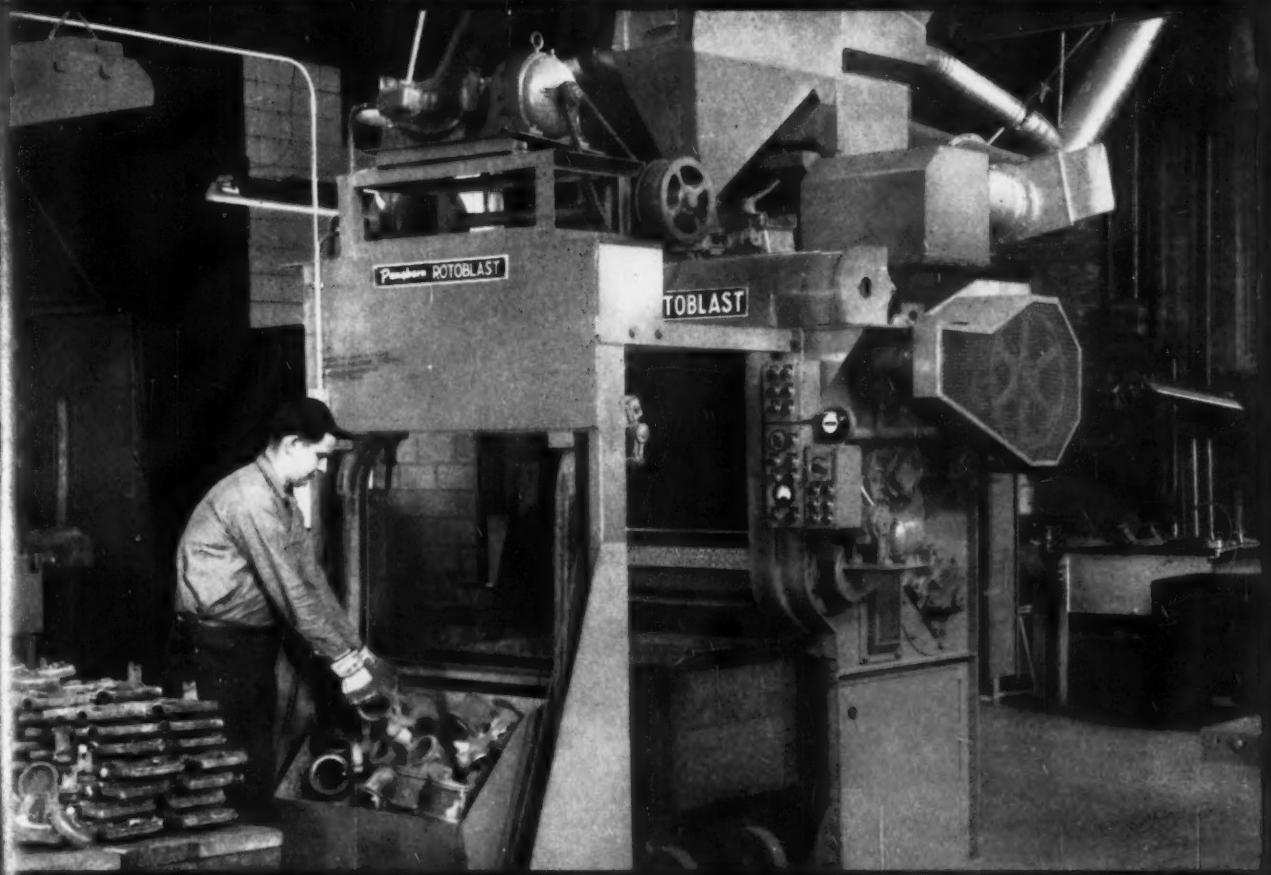
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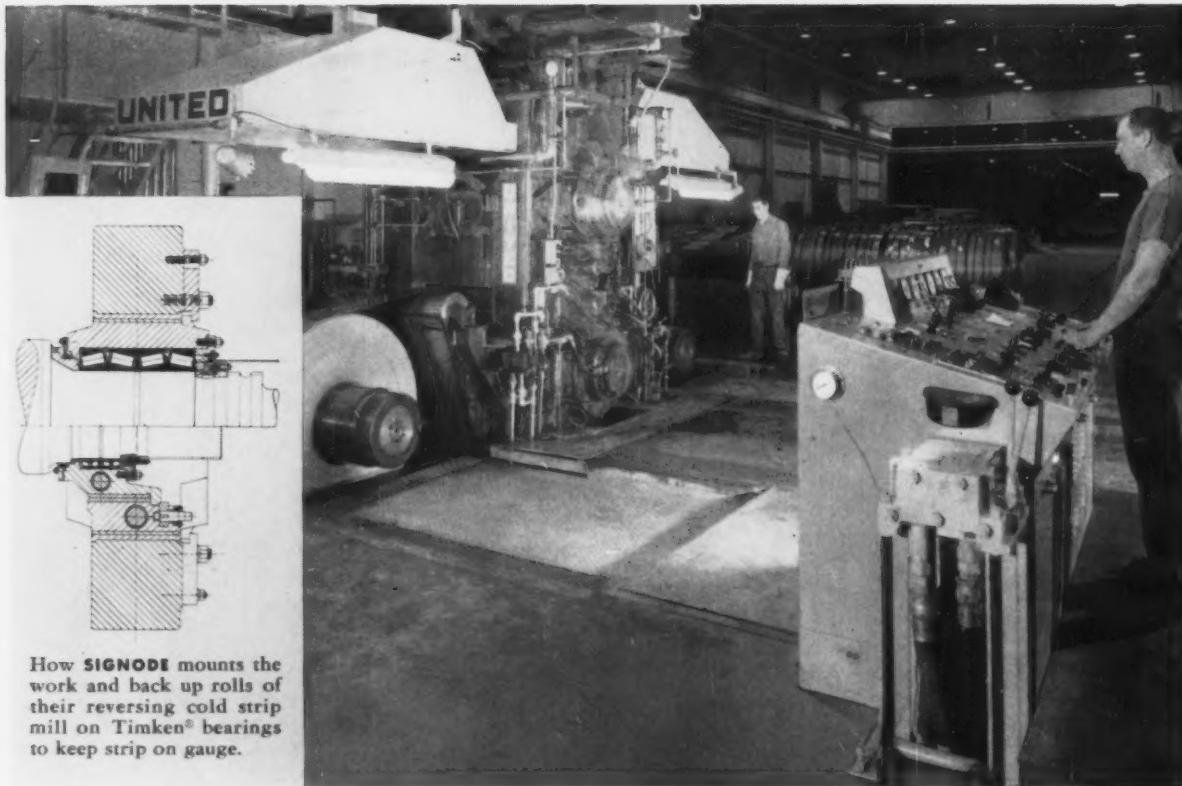
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THIS new 4-high cold strip mill built by United Engineering & Foundry for Signode Steel Strapping Company has a special X-ray gauge that measures and records strip thickness to ".0001". And mounting the work rolls, back up rolls, reel and screw down on Timken® tapered roller bearings helps keep this 11½" and 29¼" by 20" reversing cold mill turning out strip on gauge—gives Signode maximum economy, assures customers strapping of uniform gauge.

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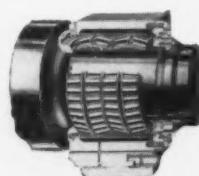
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